

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 716.—VOL. XIX.]

LONDON, SATURDAY, MAY 12, 1849.

[PRICE 6D.]

EXTENSIVE IRON-WORKS FOR SALE.
UPSET PRICE FURTHER REDUCED TO £45,000.
TO BE SOLD, BY PUBLIC ROUP, within the Royal Exchange Sale Rooms, GLASGOW, upon Wednesday, the 13th day of June next, at One o'clock afternoon (if not previously disposed of by private bargain),

THE BLAIR IRON-WORKS,
belonging to the Ayrshire Iron Company, situated in the parish of Dalry and county of Ayr, including FIVE BLAST-FURNACES, with TWO BLOWING-ENGINES, fit for these and additional furnaces, manager and workmen's houses and stove, together with a large extent of MINERAL FIELDS, held under most favourable leases, producing ironstone of the best qualities, Coal, Limestone, and Fire-clay, with Pits, Steam-Engines, and necessary appurtenances for carrying on the works on an extensive scale; also the adjoining

MALLEABLE IRON-WORKS,
So far as erected—all having a connection with the Glasgow and Ayr Railway, and as more fully described in former advertisements.
There is a large stock of ironstone on the ground, which may be got at a valuation.
For particulars apply to Mr. Biggart, at the works; W. D. Starling, Esq., 13, Change-alley, Birchin-lane, London; Mr. Watson, 32, or Mr. Brown, 35, St. Vincent-street, Glasgow.—Glasgow, May 10, 1849.

TO BE SOLD (CHEAP), a 40-horse HIGH-PRESSURE
HORIZONTAL STEAM-ENGINE, quite new; cylinder 24 inches diameter, stroke 4 feet, mounted upon a strong cast-iron frame.—Apply to Mr. Matthew Smith, Sylvester Works, Sheffield, where the engine may be seen.

CORNWALL—TYWANHALL MINES.
IMPORTANT AND VALUABLE COPPER MINES TO BE LET, BY PRIVATE CONTRACT, comprising the extensive SETTS formerly

UNITED HILLS, WHEEL CHARLES, and SOUTH TOWAN, WHEEL FANCY,
belonging to the Duchy of Cornwall, in the parish of SAINT AGNES.—These mines having been surrendered to the Duchy by the late lessees, during the extreme pressure of the latter part of the year 1847, have since been placed in good working order, and are yielding large and increasing returns. They are now to be leased, at a moderate rate of dues, for a term of 21 years.
An arrangement can be made for putting the lessees of the Tywanhall Mines in possession of the adjoining sets of Wheel Sparrow, West Wheel Sparrow, Bassett's United Hills, Wheel Clarence, and Wheel Lydia, the property of the representatives of the late John Bassett, Esq.

Proposals will be received at the Duchy of Cornwall Office, Somerset House; and any further information may be obtained by application there, or to R. Taylor, Esq., Falmouth, Duchy of Cornwall, Somerset House, Feb. 20, 1849.

COAL MINES IN FLINTSHIRE.—THE TRYDDYN
LODGE ESTATE TO BE SOLD, BY PRIVATE TREATY, OR LET ON LEASE.
It consists of about 70 acres of good LAND, all in a ring fence, a good and commodious HOUSE, with a large GARDEN, COACH-HOUSE, STABLES, and all necessary and complete FARM BUILDINGS; together with TWENTY-ONE STONE-BUILT COTTAGES for workmen, erected on the estate.
A good turnpike-road—that from Chester to Ruthin—passes through the property, and a branch of the Mold Railway (which runs into the Chester and Holyhead Railway, and is now about to open) will come within a quarter of a mile of the estate.
The Tryddyn Lodge Estate adjoins the Coal Talon Iron-Works and Coal-works. The mines are wholly unworked; but closely adjoining workings at Coal Talon on the south side, and those of the Frank Farm Colliery on the north side, fully warrant the conclusion that all the seams of coal known in the district lie entire, and under most favourable circumstances, throughout the whole extent of the Tryddyn Lodge lands, consisting of at least nine workable seams of coal, of an aggregate thickness of 44 feet, within 160 yards of the surface. These coals (especially the Two-yard, Brassey, Main Coal, and those below) are of very superior quality, and in high esteem for house or smith's use, smelting, or coking. It is also most satisfactorily concluded that several beds of ironstone, of very excellent quality, lie entire under this property; four workings thereof form an aggregate thickness of 40 inches.

Apply to Messrs. Harper and Parry Jones, solicitors, Whitechurch, Salop.

TO IRON AND TIN-PLATE MANUFACTURERS.
TO BE LET, OR SOLD, THE NEW LAYS IRON AND TIN-PLATE WORKS, situated at BROCKMOOR, within 3 miles of Stourbridge, on the banks of the Stourbridge, and at the mouth of the Stourbridge Extension Canals, and in the centre of the Kingswinford Coal-field.

The works are in excellent order, and well adapted to the manufacture of Rails, Bars, Boiler-plates, and every description of Merchant Iron.
If sold, the purchase-money may, if required, be paid by instalments, or a considerable portion thereof may remain on mortgage for a period of years.
For further particulars apply to Mr. Henry Corser, solicitor, Stourbridge.

TENDERS FOR WELSH COAL AND NORWAY TIMBER.
—TENDERS may be FORWARDED TO ME, on or before the 1st proximo, for SUPPLYING TWO THOUSAND TONS, more or less, as may be required, of

WELSH COAL,
of the best quality for Steam-Engines, to be DELIVERED at WEST CARADON, GONAMENA, and WHEAL MARY CONSOLS MINES, between Midsummer, 1849, and Midsummer, 1850, in about equal quantities monthly, and so that the mines shall be kept constantly supplied; in default of which, and also of the quality being the best, the cost above the contract price of obtaining a supply elsewhere to be charged to the contractors. The mode of payment to be by acceptances, at three months, from the times (once in two months) of auditing the accounts.

TENDERS may also be FORWARDED TO ME, on or before the 1st proximo, for SUPPLYING the following Mines—viz.: WEST CARADON, GONAMENA, CRAIDDOCK MOOR, and WHEAL MARY CONSOLS, for 12 months, from Midsummer next, with

NORWAY TIMBER,
half Dram and half Longwood, of good quality and average lengths, to be delivered at the respective mines, in such quantities as may be required, and when required, and to be charged at the measurement on which the duty has been paid.

Should the agents not approve of the quality of any timber sent in, the contractors to remove the same; and, at the option of the respective adventurers, either replace it by an article of approved quality, or submit to a reduction from their bills of the amount of difference between the contract price and that at which the adventurers may obtain a supply from some other party; also the amount of the like difference to be deducted from the contractors' bills in respect of timber purchased elsewhere, in consequence of the contractors not sending in supplies when and as required.

Payment for timber by acceptances at three months, as for coal above.
Any mine may be tendered for separately, and either for coal or timber.
Lisheard, 1st of 5th month (May), 1849. EDWD. A. CROUCH,

JAMES BOYDELL, LAND, MINE, AND MACHINERY
VALUER, AND AGENT,
No. 54, THREADNEEDLE-STREET, LONDON.

A PATENT RIGHT FOR BUILDING VESSELS WITH IRON, on a principle which combines increased strength with greater economy of manufacture.
Also, ONE for the CONSTRUCTION OF IRON ROOFS, on a like principle. A specimen of this may be seen as a roof covering one of the retorts houses of the Birmingham and Staffordshire Gas Company, by permission of Mr. Clift, the engineer, at the works.
Also, ONE for IRON JOISTS and RAFTERS, and for a plan of joining large plates and sheets of iron.

Also, ONE for the AMALGAMATION OF STEEL AND IRON—in the progress of the manufacture of the latter, by which a great saving may be effected in the cost of making edged tools.
The LEASE of a very celebrated FOUNDRY and ENGINEERING ESTABLISHMENT, on the River Dee, complete, with fixtures, machinery and tools, in working order, and ready for any parties to embark at once on building first-class iron steam-vessels, and marine and locomotive engines.

The above will be found worthy the attention of any parties desiring to invest money in a profitable business, as they will be disposed of upon terms which will ensure an unusual return to the purchasers of them.
Also, SOME COAL and IRONSTONE MINES, FREESTONE QUARRY, and a large FREESTONE ESTATE.
Also, STEAM-ENGINES and MACHINERY, of all descriptions, and which he is enabled to offer at very moderate prices.

Also, SHARES in a well-known valuable SLATE QUARRY, in CARNARVONSHIRE.
Also, SHARES in, or the whole of, a GAS-WORK, which supplies exclusively a populous town in Shropshire, and which can be greatly extended.
Particulars of the above may be had, upon application, at 54, Threadneedle-street.

TO ENGINEERS, BUILDERS, AND ARCHITECTS.
JAMES BOYDELL, 54, THREADNEEDLE-STREET, having been a very large manufacturer of machinery and irregular shaped iron, and having accomplished the rolling of some descriptions of the latter, thought by many to have been impracticable, will be happy to ASSIST any ENGINEERS, SHIPBUILDERS, and ARCHITECTS, in the planning of details of what IRONWORK they may have occasion for, or bringing to perfection any invention in machinery, as well as procuring such materials for the purpose as they may require.

THE STEAM-ENGINE.—W. BROTHERTON & CO. beg to CALL the ATTENTION of ALL PARTIES EMPLOYING STEAM-POWER to their PATENT FURNACE for the ECONOMICAL WORKING of the STEAM-ENGINE and other MACHINERY.
The adoption of its use effects a saving of 25 per cent. on the quantity required for locomotion over any other oil; and its properties are such as to greatly preserve the bearings of machinery in general. A trial will prove the fact.

W. BROTHERTON & CO.,
PATENT OIL FACTORY, HUNGERFORD WHARF, CHARING-CROSS, LONDON.

WARRANTED SAFETY FUSE.—W. BRUNTON & CO.
beg to inform Mine Agents, Contractors, and Merchants, that having completed their Machinery for the MANUFACTURE of the ABOVE ARTICLE, they are enabled to offer FUSE of a very superior quality, and at considerably reduced prices.
W. B. & Co. can SUPPLY FUSE in ANY LENGTHS that may be required.
Penhellen Fuse Factory, Pool, Truro, Cornwall.

TESTIMONIALS.
We, the undersigned, hereby bear our testimony to the excellence of the Safety Fuse, manufactured by Messrs. Brunton and Co. We have had it in use in our mines; and, after sufficient trial, find it to be fully equal to any Fuse we have ever used:—

Carb Brea Mine. R. H. Pike, Pursuer. John Louten, James Miners, John Vivian, John James, Agents. North Pool Agents. James Evans, John Nancarrow, Frederic Evans. South Pool Agents. John Dunkin, William Thomas. Cook's Kitchen Agents. Joseph Vivian, Richard Bennetts.	Cook's Kitchen Agents. John Ivey, William Hitchens. North Pool Agents. Joseph Vivian, William Michell, William Thomas. Tinners Agents. Peter Floyd, Thomas Stainsby, Thomas Leam, Henry Hocken, Richard Martin. William Nancarrow. Alex. Eudey, Joseph Eudey, } Wheal Agar Agents.
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STEAM TO INDIA AND CHINA, via EGYPT.—Regular
MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.
THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY
BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 30th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.
MEDITERRANEAN.—MALTA—On the 20th and 29th of every month. CONSTANTINOPLE—On the 29th of the month. ALEXANDRIA—On the 30th of the month.
SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th, 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Lendenhall-street, London; and 57, High-street, Southampton.

INDURATED AND IMPERVIOUS STONE, CHALK, &c.
—AGENTS, with capital, are WANTED in ALL TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHISON'S INDURATED MATERIALS—hard as granite, impervious to moisture, vermin, &c.; the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large.
Apply to HUTCHISON & CO.,
East Temple Chambers, London, or Tunbridge Wells, Kent, stating name, address, and capital at command.

N.B.—Houses cured of damp. The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c.
LICENCES GRANTED.

RIDER'S RAILWAY BRIDGE.
—THIS BRIDGE, BUILT wholly of IRON, will be ERECTED by the PATENT

on the following terms:—
A BRIDGE, of 160 span, for a double track railway, broad gauge.—Price £2000.
A BRIDGE, of 100-foot span, same dimensions.—Price £1000.
These prices are exclusive of abutments or piers.

ROADWAY BRIDGES at a reduction on cost of one-half to two-thirds.
Apply to Mr. S. MOULTON, Patents, Bradford, Wilts, or to Mr. Howard Jacobson, Suffolk-lane, Thames-street, London.

CUNNINGHAM AND CARTER'S NEW SYSTEM OF
RAILWAY PROPULSION.—Railway Directors, Engineers, and the public generally, are invited to examine this system, which may be VIEWED on Mondays, Wednesdays, and Saturdays, from half-past Eleven to Three o'clock, at Ingram's Manufactory, 29, CITY-ROAD, near Finsbury-square.

The following is an estimate of the daily expense of working a double line of 50 miles long, during a period of 10 hours, with trains starting from each terminus every half hour—six trains always running on the line:—

Coals for five stationary engines, of 100-horse power each, at 3 lbs. per horse-power per hour each (say, 11 tons, at 14s. per ton).....	£ 7 14 0
Wages—Enginemmen, with relief, 10 at 6s.	£ 3 0 0
" Stokers ditto 10 at 4s.	2 0 0
" Cleaners ditto 10 at 2s. 6d.	1 5 0
" Drivers ditto 12 at 5s.	3 0 0
" Guards ditto 12 at 5s.	3 0 0
Twenty men stationed on the line, 3s.	15 5 0
Repairs of engines, with depreciation, &c., at £200 per annum, each 5=1000.	
Per annum—daily proportion	2 15 0
Contingencies	4 6 0
Total	£30 0 0

Forty trains, at 15s. per train—£60, being a fraction over 3d. per train per mile, independent of a saving of one-third of the present expense in the maintenance of way.

CWMBRAIN PATENT IRON REFINERY.—The PROPRIETORS of IRON FORGES and MILLS are respectfully INVITED to MAKE TRIAL of Mr. BLEWITT'S REFINED IRON, or METAL, PREPARED by a

NEW PATENT PROCESS,
whereby the IRON is completely FREED from the IMPURITIES CONTRACTED in the BLAST-FURNACE, by judicious mixtures, rendered applicable to every kind of manufacture. Heretofore, the metal usually sold in the market has been produced from the worst pigs, scraps, and refuse of some particular blast-furnace, or set of furnaces, without any mixture, or any regard to quality, or the purpose for which it might be required. The PATENT METAL IS PREPARED ON SYSTEM, and TO ORDER, for all the following purposes:—

1. For BOILER and TANK-PLATES.
2. For TIN-PLATES, commonly called COKE-PLATES.
3. For STRONG CABLE BOLTS, RIVET, and ANGLE IRON.
4. This COMPOUND PUDDLED, heat under the hammer into a bloom, reheated, and rolled into a 6 or 6½-inch bar, makes TOPS and BOTTOMS for FLANCH and OTHER RAILS, of very superior quality, and attended with less waste than any other kind of iron used for that purpose. It is also well adapted for nail-roads, horse-shoes, and for other ordinary uses of the blacksmith.

The PATENT METAL is marked with a squirrel, and the initials "R. J. B.," and is to be had only at the "Cwmbrain Iron-Works," near Newport, Monmouthshire.

PATENT TOUGHENED CAST-IRON.—Messrs. GARDEN and MACANDREW beg to call the attention of Architects, Builders, Engineers, Ironfounders, &c., to the ABOVE DESCRIPTION OF IRON (Mr. Morris Stirling's Patent), which, after numerous trials, experimental and practical, is found greatly to exceed all other cast-iron in tensile and transverse strength, as well as in resistance to crushing forces. Several of the most extensive ironmasters have been licensed, and from them, or their brokers, the patent iron can be procured.

Messrs. GARDEN and MACANDREW have always a STOCK of this IRON in PIGS, and are ready to EXECUTE ORDERS to ANY EXTENT, on the shortest notice.
27, Queen-street, Cheapside, April 25, 1849.

SCOTTISH PROVIDENT INSTITUTION.
ESTABLISHED 1837.

INCORPORATED BY SPECIAL ACT OF PARLIAMENT, 1848.
TRUSTEES.

The Right Hon. W. JOHNSTON, of Kirkhill, Lord Provost of the City of Edinburgh.
CHARLES COWAN, Esq., M.P.
WILLIAM CAMPBELL, Esq., of Tulliechewan.
JOHN MASTERMAN, Esq., No. 35, Nicholas-lane.
JAMES FREDIE, Esq., W.S.

Mutual assurance by very moderate premiums.—Whole profits divided amongst the assured exclusively.—Policies indisputable, unless obtained by fraud.—No entry money.
Annual Premiums per £100, with whole Profits.
Age 20. | Age 25. | Age 30. | Age 35. | Age 40. | Age 45. | Age 50. | Age 55.
£1 15 8 | £1 18 0 | £2 1 6 | £2 6 10 | £3 14 9 | £3 5 9 | £4 1 7 | £5 1 11

The Eleventh Annual Report is now ready, and, with tables and every information, may be had on application.
LONDON OFFICE—No. 12, MOORGATE-STREET.

PATENT IMPROVEMENTS IN CHRONOMETERS,
WATCHES AND CLOCKS.—E. J. DENT, 82, Strand, and 33, Cockspur-street, watch and clock maker, by APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1856, 1840, 1842. Silver lever watches, jewelled in four holes, 6 gu. each; in gold cases, from 6s. to £10 extra. Gold horizontal watches, with gold dials, from 8 gu. to 12 gu. each.

DENT'S PATENT DIAPHRAGM
or Meridian Instrument, is now ready for delivery.—Pamphlets containing a description and directions for its use 1s. each, but to customers gratis.

GRANITE QUARRY TO BE DISPOSED OF, in the SOUTH of CORNWALL, within three miles of the shipping port—lease for ever; dues most reasonable; quality first-rate, and quantity unlimited.—For inspecting samples, and further particulars, apply to Mr. Bartlett, 68, Lombard-street, London.

VALLEY OF LOETSCHEN SILVER-LEAD MINING
AND SMELTING COMPANY.
The MINES being situated near TOURTEMAGNE, in the Canton DU VALAIS, SWITZERLAND.

CAUTION.—We, the Undersigned, proprietors of the Silver-Lead Mines of Loetschen, situated in the Canton du Valais, Switzerland, hereby give Notice, that Mr. Gustavus William Blanch, surgeon, of No. 3, Albion-place, Blackfriars-road, London, is not a shareholder in the above-named mines, and that he has not our authority to dispose of any shares or interest whatever in the said mines.
JOHN HOOKER, } Proprietors.

DUISBURG IRON-WORKS AND MINES,
IN WESTPHALIA, CLOSE TO THE RHINE.
Managed in England according to the principles of the "Cost-book System," and in Prussia as a Société en Commandite, under laws limiting the liability of the shareholders to their personal subscription.
Company's Offices, 28, Moorgate-street, City.

IRON, HARDWARE, AND METAL TRADES' PENSION
SOCIETY.—SIXTH ELECTION.—A GENERAL MEETING of the members of the above society will be HELD at the London Tavern, Bishopsgate-street, on Monday, the 28th day of May, 1849, at half-past Twelve o'clock precisely, for the purpose of electing Four Men and Two Women, as additional pensioners, and for other business.
The poll will commence at One o'clock, and no polling paper can be received after Four o'clock.
67, Upper Thames-street, London, May 1, 1849. THOMAS HAWKINS, Hon. Sec.

LANCASHIRE AND YORKSHIRE RAILWAY.
CONTRACTS FOR COKE.

The DIRECTORS of the LANCASHIRE AND YORKSHIRE RAILWAY will MEET at the OFFICES, Hunt's Bank, Manchester, on Tuesday, the 23d May next, to RECEIVE TENDERS for a SUPPLY OF COKE, of the best quality, for locomotive and smithy purposes. The parties tendering will be required to state at which of the company's stations they will deliver the coke, and the proposed extent of such deliveries per week; also the period for which they will be willing to enter into a contract with the company, and the security they will provide.

Further particulars, and forms of tender, may be had on application to the undersigned; such forms, when filled up, to be properly endorsed and addressed to the directors, and to be sent in not later than Ten o'clock on the morning of the 23d May next.
By order, JNO. DUNSTAN, Jan.

Board Room, Manchester, April 25, 1849.

TO RAILWAY CONTRACTORS, BUILDERS, WELL-
SINKERS, AND OTHERS.—MATERIALS, HOUSEHOLD FURNITURE, &c.
—By Messrs. FULLER and HORSEY, on the premises, Bridge-house, Cross-road-bridge, Croydon, near the New Church, on Monday, May 14, at Twelve, without reserve, SURPLUS MATERIALS, including an expensive BORING APPARATUS, with rods and tackle, several loads of timber, planks and quartering, railway trolly, truck wheels and axles, wheelbarrows, forge and bellows and smith's tools, coil of new well rope, scaffold poles and boards, circular saw bench, crab crane, pile driving machine, and numerous other effects; 12,000 yards of gravel in a ballast-field adjacent to the railway; also a few lots of modern household furniture, rosewood drawing-room suite, lute table, couch, set of chairs, carpets, mahogany wardrobe, and other effects.
To be viewed the morning of sale, when catalogues may be had on the premises; of Messrs. Lindsay and Mason, solicitors, Gresham-street; and of Messrs. Fuller and Horsey, Billiter-street, City.

TO CONTRACTORS, ENGINEERS, MILLWRIGHTS,
BUILDERS, AND OTHERS.—By Messrs. FULLER and HORSEY, on Tuesday, May 22, at Twelve, opposite the George Inn and Roak's Field, Adlestree, near Chertsey, Surrey, the valuable IRON MACHINERY of a WINDMILL, comprising perpendicular and cross shafting, break wheel 8 feet diameter, cog wheels in segments, spur, bevel, and pinion wheels, four 9-foot iron posts, wind cross for sails, two windmill sails 34 feet long, 36 patent shutters for sails, plunger blocks and apparatus; a vertical saw mill by Messrs. Wilson and Co., Leicester, with rack frame, eight saws, fly-wheels, strap and rigger wheels, brass spur and pinion wheels, shafting, &c.; 80 balist waggon, 40 wheelbarrows, two chaff-cutting machines, two pile engines, 24 semi-centres, scaffold boards, cart, harness, and numerous other effects.

To be viewed on Monday previous to the sale, when catalogues may be had on the premises; and of Messrs. Fuller and Horsey, Billiter-street, City.

TO IRONFOUNDERS AND ENGINEERS.—TO BE LET,
OR SOLD, BY PRIVATE CONTRACT, the PHENIX FOUNDRY and FACTORY, at TIVDALE, near DUDLEY, suitable for carrying on an extensive trade in the Railway or General Engineering Business. The whole is fitted up with every convenience for immediate occupation.
For particulars apply to Mr. G. Hickman, Wolverhampton-street, Dudley.

MINING PROPERTY.—Mr. JAMES HERRON, MINE
AGENT, 33, CLEMENTS-LANE, LOMBARD-STREET, has received instructions to DISPOSE of SHARES in FIRST CLASS MINES, paying regular dividends, and yielding to the purchaser from 17½ to 35 per cent. upon his outlay. He is also in a position to transact business in the following: viz.: West Caradon, Condarrow, East Wheel Rose, Trelawny, Mary Ann, H. Ambush, Tincroft, Tamar Consols, Treleigh, Devon Great Consols, South Wheel Frances, Stray Park, Kirkcudbright, St. John del Rey, Bolanos, and Allen Mines.

MINING OFFICES, THREE KING'S COURT, LOMBARD
STREET, LONDON.—Messrs. R. TREDINNICK & CO. beg to draw the attention of capitalists to the DEPRESSED MARKET VALUE of SHARES in ENGLISH and FOREIGN MINES, many of which pay dividends of from 30 to 35 per cent. per annum, whilst those on the eve of so doing are selling at corresponding low prices.—Messrs. T. & Co. continue to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously, upon personal application.—MONEY ADVANCED upon the above securities.

MINING OFFICES, No. 8, GEORGE-YARD, LOMBARD-
STREET, LONDON.—Mr. RICHARD THOMAS (who has had 20 years' experience as a mining agent in London) OFFERS his SERVICES in the PURCHASE and SALE of MINE and OTHER SHARES, on commission. Purchases in many valuable mines may now be made at unprecedentedly low prices. The fullest information given (without charge) relative to mining investments and operations.
N.B.—R. T. has now ON SALE a limited number of SHARES in an undertaking offering unusual advantages, situated in one of the best mining districts in Cornwall.
Full particulars will be furnished on application.

JAMES LANE, MINING SHARE DEALER,
80, OLD BROAD-STREET, LONDON.

MR. GEORGE BATE, JUN., CIVIL ENGINEER AND
SURVEYOR,
WOLVERHAMPTON.

Offices in Queen-street, corner of Piper's-row.
N.B.—UNDERGROUND MINING SURVEYS accurately executed.

GUADALCANAL SILVER MINING ASSOCIATION.
Notice is hereby given, that the GENERAL MEETING of shareholders will be HELD on Wednesday, the 30th of May inst., at One o'clock precisely, at the offices of the association.
By order, H. T. HYDE, Secretary.

34, Broad-street-buildings, City, May 9, 1849.

KINZIGTHAL MINING ASSOCIATION.—In compliance with Art. 44 of the Statutes of this Association, the BALANCE-SHEET, as approved by the General Meeting on the 20th ult., will be DEPOSITED at the company's offices here, and the works, for the inspection of the shareholders, from the 26th May to the 15th of June.
GEORGE COPELAND CAPPER, Secretary.

Copies of the Report presented to the Annual Meeting may be obtained by shareholders at the office.
PEMBROKESHIRE IRON AND COAL COMPANY.
Notice is hereby given, that the ANNUAL GENERAL MEETING of the proprietors of this company will be HELD at the Gresham Rooms, 18, Basinghall-street, London, on Wednesday, the 30th inst., at half-past One o'clock precisely, to receive the report of the directors for the past year, and on general business.
By order, JOHN F. NEALE, Secretary.

ASSAYING AND ANALYSIS.—Mr. MITCHELL begs to inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of ALL PRODUCTS, metallurgical and manufacturing, at his LABORATORY,
22, HAWLEY-ROAD, KENTISH TOWN, LONDON,
to which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

TO ENGINEERS AND BOILER MAKERS.—The
BIRMINGHAM PATENT IRON TUBE COMPANY
MANUFACTURE PATENT LAP-WELDED IRON TUBES (under Mr. R. Prosser's Patent) for Marine, Locomotive, and all Tubular Boilers. Also, TUBES for Gas, Steam, and other purposes. All sorts of IRON GAS FITTINGS.
Works—Smethwick, near Birmingham.
LONDON WAREHOUSE—No. 6, Upper Thames-street.

THE GLAMORGANSHIRE IRON AND COAL COMPANY.

INSOLVENT DEBTORS' COURT, MAY 7.

IN THE MATTER OF SIR FRANCIS CHARLES KNOWLES, BART.—BANKRUPTCY AND INSOLVENCY.—In this case a very important question arose. A rule had been obtained at the instance of Sir Robert Price, on several parties, to show cause why considerable property in the Glamorganshire Iron and Coal Works should not be sold by the provisional assignees, under a vesting order made by the court on a creditor's petition in 1842, when Sir F. C. Knowles was a prisoner for debt.

Mr. Nichols appeared for Sir R. Price; Mr. Sargood for Sir F. C. Knowles; and Mr. Caarten represented a trade assignee in bankruptcy.

A preliminary objection was raised to the jurisdiction of the court. It appeared that the vesting order was made in September, 1842, and a fiat in bankruptcy was issued in July, 1847, under which Sir F. C. Knowles had obtained his certificate. The property in respect to which the application was made, related to the Glamorganshire Iron and Coal Works, in which Sir R. Price, Sir F. C. Knowles, and B. Long, Esq., were partners, on a capital of 42,000*l*. The point was, whether this court could order a sale of the interest of Sir F. C. Knowles, after his bankruptcy. It was submitted that under the 39th section, 1 and 2 Vic., cap. 110 (the Insolvent Debtors' Act), the Court of Bankruptcy had jurisdiction over the property, and not this court. The fiat was issued before a day of hearing was advertised of the case in this court. No schedule had been filed by Sir F. C. Knowles, and about five years after the vesting order he was made a bankrupt; and it was now sought to revert to the vesting order, with the view to enforce a sale of the vast property by the officers of the court. It was stated that the creditors in bankruptcy did not wish a sale, preferring to work the property under the partnership which had been formed, but Sir Robert Price objected, hence arose the present application.

The point was discussed by Mr. Sargood and Mr. Caarten against the jurisdiction of the court, and by Mr. Nichols in favour of it.

Mr. Commissioner Law considered it an important question. It was a new one, and his impression was, that there having been no day appointed or advertised for the hearing of the case, as required by the 39th section, the court was divested of its jurisdiction. The simple question was, whether in cases where no schedules were filed, had the court any jurisdiction after that time to consider the point, and on his return gave his reasons at some length. His impression was, that the jurisdiction of the court was gone; but, as the matter was one of importance, he would allow it to be opened, if the parties required further discussion.

The learned Commissioner mentioned, in the course of his observations, that the clause was copied from the act which (Mr. Commissioner Law) prepared in the year 1826, and additions were made with regard to vesting orders, and applications by debtors, as well as their creditors. The clause, in the expression, which was easily accounted for by the haste in which the Act the court now administered (1 and 2 Vic.) was prepared from the Act he had drawn. If he had been correctly informed, the Act was altered in about 24 hours; and, considering the expedition used, he had often expressed his surprise that it had been done so well.

The court named the 17th inst., if it should be deemed advisable to bring the matter again under consideration, if being the impression of his Honour that his jurisdiction was gone for the reasons stated.

NISTER DALE IRON COMPANY.

VICE-CHANCELLOR'S COURT, MAY 8.

A motion was made in this case by Mr. J. Bailly, to confirm a special report made by Master Farrer, under the Winding up Act of 1848, approving of a compromise between the official manager of the company and Mrs. Hughes, the widow and executrix of the late Rev. Mr. Hughes, who had held 268 shares in the company. The terms of compromise, which were the payment of 2000*l*. by instalments to meet present liabilities, and a covenant to pay a further sum of 1000*l*. if required for future calls, which was to be a primary charge on the testator's estate, were approved of by all parties.

His Honour (Knight Bruce) made the order confirming the report.

CALIFORNIA.

NEW YORK, APRIL 17.—Recent accounts, however confirmatory of the fact that gold is found to a considerable extent in California, are equally calculated to dissipate the ideas which some have entertained as to the effect of these new discoveries upon the currency, and to establish also the fact that its acquisition is a work of severe toil, requiring submission to suffering, and privations much more endurable to the excited imaginations of the aspirants for wealth at a distance than they are in reality; and hence the conclusion is obvious, that a large proportion of the emigrants who have gone thither will, from necessity, not continue the laborious occupation for any length of time, but as they find each for himself other means of living, will adapt themselves to business more congenial to their former habits. But supposing the larger part to engage in gold digging, it would appear from the accounts considered most reliable, that the average per diem compensation will not be found sufficient to satisfy their expectations, and will diminish as the ground is gone over. The latest accounts place the whole amount of gold collected at from three to five millions of dollars; an estimate more likely, with the disposition to exaggerate which appears to exist on the Pacific and elsewhere, to be too large; than too small; and to collect this sum there have been from 5000 to 10,000 men engaged for upwards of six months.

Assuming the smallest number, say 4000 men, to have been employed for 180 days, as the statement heretofore informs us that many persons get \$100 per day, and none less than an ounce, it is fair to take \$20 per day as the average result of individual labour. The aggregate amount of the six months would, upon this basis, be over 14,000,000, some 10,000,000 over the amount of the highest estimate, so that the calculations and statements do not match, though it may be impossible at present to say where the error lies. Upon the amount of 4,000,000 as the maximum, the average is less than \$6 per day, and however good remuneration this may be considered as a wage, it is not calculated for the endurance of hardship and privation by people accustomed to both, when the expenses of going and returning, and subsistence on the ground, to say nothing of the hazards, are taken into account, it must be looked upon as a very moderate recompense, and one which will not tend to produce an emigration of sensible men to California.

A Mr. Wethered, of Baltimore, is so far the only actual gold digger who has reported himself safe back again from the mines. He estimates the amount of gold raised up to the beginning of December, at \$4,000,000. He reached a distance of 350 miles from San Francisco, up the Americano, which is farther than any American had gone before, and saw the smoke of what he believed was a large volcano, some 40 or 50 miles distant. He passed large numbers of persons at the different places, some of whom had been successful, and many so unsuccessful that they preferred returning to San Francisco and working for wages. A Mr. Downes, of Massachusetts, who went out in command of a company of adventurers from that state, after reaching Panama, and stopping there three days, concluded to abandon his journey, and returned with the greater part of his company last week, in the *Northern*. This gentleman has favoured me with a narrative of what he learned and experienced, and his information, though not so flattering as others, is perfectly reliable.

He says he left 1500 Americans at Panama, some of whom had been waiting conveyance to California for three months, besides 500 more at Gorgona, and 500 more at Chagres. The means of many were exhausted, and they were reduced to extremities. A meeting had been held to consider the possibility of travelling thence by land, through Central America and Mexico, but the project was found impracticable for want of roads, water, and provisions. Some were coming back to New Orleans, to endeavour to resume their journey from that point by one overland route; but the majority held on to the hope of getting passage by water to San Francisco, though it was generally believed that the California would not be able to return to the isthmus very soon—that her crew would all desert immediately on reaching San Francisco. There was much sickness at Panama, as well as on the way across the isthmus—typhoid, brain fever, &c., &c. The latest dates from that place to San Francisco come down only to December. Two British gentlemen, who left at that time, came passengers in the *Northern*. The journey to the gold mines had completely disheartened them. They calculated that as much money may be earned by working here for \$1 a day, as by digging on the Sacramento. The average yield per man they found not more than \$5 a day, and the cost of living six! There were many, certainly, who did better, but this, in their judgment, is a fair average.—*Correspondent of Birmingham Journal*.

IRON HOUSE FOR CALIFORNIA.—An extensive iron warehouse has just been completed by Messrs. E. T. Bellhouse and Co. of this city, for Messrs. F. M. and Roberts, of Liverpool, who are about to establish a branch of their business at San Francisco. The dimensions of the metallic edifice are as follow:—Extreme length, 60 feet; width, 24 feet; height to the under side of the eaves, 10 feet; height to peak of roof, 17 feet. There is an iron division 15 feet from one end, and the smaller compartment is intended to be used as a dwelling house or office. A strong timber frame forms the foundation, on the top edge of which are screwed down moulded base plates of cast iron. The sides, ends, partition, and roof are made principally of wrought-iron of the T section, set at distances of about 5 feet apart; to these are bolted sheets of iron one-eighth of an inch in thickness, which are joined to each other at lap joints by bolts. The whole of the doors and shutters are made of wrought-iron, and the windows, skylights, ventilators, rain pipes, and gutters, are of cast-iron. We believe that the entire structure has been fitted and fixed up in a fortnight. It is now at a yard in Bevington Bush, Liverpool.—*Manchester Examiner*.

UNIVERSAL LIFE ASSURANCE COMPANY.—The annual general meeting of shareholders took place on Thursday, at the offices of the company, King William-street.—The report presented to the proprietors was highly satisfactory: from the estimated amount of surplus, after providing for all the liabilities of the society to the 31st Dec. last, the board recommended that the sum of 139,121*l*. 16*s*. 8*d*. be declared the divisible profits of the society for the last five years; that one-fifth, or 27,824*l*. 7*s*. 4*d*. be divided between the policy holders and the shareholders—three-fourths, or 20,868*l*. 8*s*. 6*d*. to the former, and one-fourth, or 6956*l*. 1*s*. 10*d*. to the latter; that a reduction of 4*s*. be declared as the current annual premium of all policies taken out for the whole term of life on the participating scale before 9th Jan., 1844.

EASTERN COUNTIES RAILWAY.—At the meeting of shareholders, on Thursday, the report of the committee of investigation was adopted, with the exception of the recommendation for the Norfolk amalgamation, which was carried by a show of hands, but upon which a poll was subsequently demanded. Owing to the storm of disapprobation against them, the directors announced their intention to resign in a body, holding office only until their successors shall be appointed; and a motion by Mr. Cash was then carried, that for the purpose of electing eight directors in every respect suitable, the investigation committee should select 80 names from amongst the proprietors holding from 1000*l*. to 10,000*l*. stock each; and that from these, together with the committee, making in all 38 names, the nomination should take place.

GUILDFORD DRAINAGE PLANS.—After long hesitation, the various plans for the drainage of Guilford, sent in competition, were submitted by the Committee to Prof. Hosking for examination, to assist them in making the award. Three plans have been selected for final consideration, marked "Pioneer," "Specula," and "C. Engineer."—*Bulldoz*.

A MOST MIRACULOUS CURE OF A BAD LEG OF SIXTY YEARS' DURATION.—BY HOLLOWAY'S OINTMENT AND PILLS.—Mr. Barker, of 8, Gresham-place, Drypool, at the age of 16, had a breaking out on one of his legs, which ultimately formed into an ulcerous sore, and increased in severity until he was 80 years old, when it entirely took away his power of walking. At last, after seeking relief in vain for many years, he had recourse to Holloway's celebrated ointment and pills, and these invaluable medicines cured him so completely, that he is now enabled to walk as well as most men of 60 years of age.—Sold by all Druggists, and at Professor Holloway's establishment, 244, Strand.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY.....	Asiatic—5, New Burlington-street.....	2 P.M.
MONDAY.....	Royal Botanic—Inner Circle, Regent's Park.....	3 P.M.
	Geographical—4, Waterloo-place.....	8 P.M.
	Medical—Bolt-court, Fleet-street.....	8 P.M.
TUESDAY.....	Pharmaceutical—17, Bloomsbury-square.....	11 A.M.
	Civil Engineers—28, Great George-street.....	8 P.M.
WEDNESDAY.....	Society of Arts—Adelphi.....	8 P.M.
	Geological—Somerset-house.....	8 P.M.
THURSDAY.....	Antiquaries—Somerset-house.....	2 P.M.
FRIDAY.....	Royal Institution—Albemarle-street.....	8 P.M.

INSTITUTION OF CIVIL ENGINEERS.

MAY 18.—JOSHUA FIELD, Esq. (Vice-President), in the chair.

At the first of these meetings, the monthly ballot took place, when the following candidates were elected:—W. Wilson and R. Peacock, as members; and W. E. Bott, W. Sowerby, jun., and Capt. H. James, R.R., as associates.

The discussion on Mr. Crampton's paper, "On the Construction of Locomotive Engines," was continued through both these evenings. The same tone of argument was kept up, and numerous instances were adduced supporting the views of both sides, but without arriving at any definite result, other than that it was desirable in all engines to lower the centre of gravity, in order to establish a great angle of stability, and to arrive at a ratio between the circumference of the driving wheel and the cubic content of the cylinders, such as whilst the greatest speed might be maintained, with an economical consumption of fuel, every facility should be afforded for starting rapidly, which was a point of importance on lines running frequent trains. On the one hand it was argued, that small driving wheels were essential for quick starting; on the other hand it was contended, that with a given amount of evaporating surface in the boiler, the tractive power would be the same under all circumstances at the periphery of the driving wheel, provided a given relative proportion existed between the cubic content of the cylinder and the circumference of the driving wheel, and that large wheels reduced the wear and tear. The long disputed question of the stability of the long boiler engines was again cursorily touched on and disposed of.

The diminution of the wear and tear of the sides of the brasses of the engines, having the driving-wheels behind, and the greatest weight upon the extremities, leaving a comparatively light load on the centre wheels, was adduced as a proof of their stability—an engine of that kind having run 25,000 miles without any appreciable lateral wear; whereas an ordinary engine on the same railway, had worn away a thickness of a quarter of an inch whilst running the same distance.

A short paper was read, describing a kind of Permanent Way, which had been somewhat extensively laid down on the Lancashire and Yorkshire and other railways, in the north of England, by Mr. Hawkshaw, M.I.C.E. The principle was that of a bridge rail, weighing 75 lbs. per yard, placed upon continuous longitudinal timber bearing; and the novelty consisted in having at each joint a malleable iron plate chair, with a projection on the upper surface, fitting within the interior of the rail, and the flanges, which were 14 in. long by 8 in. wide, and $\frac{1}{2}$ in. in thickness, attached to the rail by rivets in such a manner as to fix them firmly together, and yet to allow for the expansion and contraction caused by the variations of temperature.

The details of the arrangement were very simple and complete, and it appeared to succeed perfectly, as in an extent of 20 miles of railway so laid, over which numerous heavy trains had run daily, at considerable speed, for the last year, only three rivet heads were found to have been knocked off when recently examined.

The paper announced to be read at the next meeting of Tuesday, May 15, was "On the Theory of Transverse Strain of Cast-iron Beams," by W. T. Doyno, Assoc. Inst. C.E.

INSTITUTION OF MECHANICAL ENGINEERS.

The general meeting of members was held, as usual, at the Philosophical Institution, Birmingham, at which the attendance was considerable—more than ordinary interest having been excited in consequence of the new president, ROBERT STEPHENSON, Esq., taking the chair for the first time. Immediately after having taken his seat—

The PRESIDENT rose, and remarked that in opening the business of the meeting, he must be allowed to tender his sincere thanks for the distinguished privilege they had conferred upon him by electing him to the office of president. He highly prized the honour, and would endeavour to prove himself worthy of it, by attending with diligence and energy to the interests of the institution. In undertaking that duty, it was not merely because he delighted in mechanical pursuits, but he was motivated also by the feeling that he should be doing honour to the departed. He considered it necessary to say that he had undertaken the duty not without some apprehension that from a want of energy on the part of the members, the fate of all former institutions of the kind—failure—might also be the ultimate end of this. It was a remarkable fact, that in a country like Great Britain, whose wealth and power were so closely connected with the development of the mechanical arts and sciences, institutions like their own should fail to reach a higher standard than they did. Astronomers, geologists, physiologists, and botanists extended and maintained their societies, yet nothing but languidness and inactivity characterised the pursuit of those arts and sciences on which the nation's wealth absolutely depended. This was the more remarkable, because the country stood pre-eminent in mechanical ability. He did not say so in any spirit of egotism, as all foreigners conceded to them an unmeasured pre-eminence in those particular arts. Without despairing of the success of the institution, he felt that in undertaking the task it was necessary that he should impress on the members the absolute necessity of co-operating with him energetically in the further development of the institution, for without energy and industry they must fail as heretofore. After the address of the president, which was received with cordial applause, the meeting proceeded to the consideration of the papers.

IMPROVED RAILWAY CHAIRS AND SWITCHES.

It will be remembered that this subject was introduced at the last meeting, and excited considerable interest. Mr. BAINES, the inventor, was present on this evening, and gave a further explanation of his invention. The peculiarity of the chair consists in an arrangement whereby the joints are prevented from rising or getting out of line, and the rails from driving forward. To effect these objects the outer jaw of the chair fits close up to the under side of the head of the rails, but the inner jaw is only of sufficient height to clip the bottom flange, and the rail is not fixed by a key, but by a square wrought-iron dowel pin, which is passed through a hole in the outer jaw of the chair, and a corresponding notch in the end of each rail. This pin has a large flat head, and under the head is placed a wrought-iron plate, 3 in. long, which fits close up to the head of the rails on the inner side, and rests on the chair. A square cotter is then driven vertically through the outer end of the dowel pin, which draws the whole firmly up to the outer jaw of the chair. The wrought-iron plate is $\frac{1}{2}$ -inch thick in the middle, tapered to the ends, and slightly cambered, and is sprung flat by driving the cotter, which is made long enough to drive through the bottom of the chair into the sleeper, and serve as the spike on the outer side of the chair. A slot is made in the upper part of the cotter to allow the cotter being drawn out when required. The pressure of the wheels has no tendency to loosen the fixing of the rails in the chair, as the outer jaw fits close to the head of the rails, while the bottom flange is firmly clipped by the inner jaw. The dowel pin does not receive any of the pressure of the wheels, but holds the rails against the outer jaw. It also prevents the rails from rising at the joint, and from driving forward. The effect of the long plate under the head of the dowel pin is to connect the two rails stiffly together, so as to prevent the working of the joint. This improvement was shown by two models of five lengths of rail, one set connected in the ordinary mode, the other by the method under notice. Another part of the invention relates to an intermediate chair, the jaws of which are alike, but set obliquely instead of opposite each other. It is slipped endways on the rail, and then twisted at right angles to the rail, which makes it grip it firmly between the jaws. It is held by means of spikes. The last part of the invention is an improvement in switches, which consists principally in making the tongue about an inch deeper than the rail, so that it may work under it. The object sought is to secure steadiness, and a provision is made for causing the switch to clean itself.

In the course of the discussion, in which the President, Mr. Woodhouse, Mr. McConnell, and Mr. Slater took part, it was stated that an experiment had been tried with the chairs on the Norfolk line for nearly a year, and the result was quite satisfactory. The whole of the ballast was taken away from the joint sleeper, and the train allowed to pass over it, and there was only a slight deflection. At the termination of the discussion, the President, who took considerable interest in the subject, said he should be glad to know the result of a trial on a main line.

AN EXPRESS LOCOMOTIVE.

The SECRETARY then read a paper by Mr. Weallens, of Newcastle, which was accompanied by drawings. The engine was manufactured by Messrs. R. Stephenson, and Co., for the York, Newcastle, and Berwick Railway. It had an inside cylinder with a crank axle and six wheels, with inside bearings for the crank axle, and outside bearings for the leading and trailing axles, and the valves were placed on the outer side of the cylinders, instead of the inner side as usual.

The President, Mr. McConnell, and others, made a few remarks, observing that there was some advantage in detail in the arrangement of the engine.

RAILWAY WHEELS.

The CHAIRMAN then called upon Mr. Henry Smith, of West Bromwich, to explain the principle of his new solid wrought-iron wheel, one of which was exhibited to the meeting, together with numerous drawings. The paper was contributed at the request of the Council of the Institution, and the explanation of his invention was accompanied by tables of the results of experiments made

to ascertain the resistance of the atmosphere to spoke and disc wheels, and an appendix of accidents resulting from defective wheels.—Mr. SMITH introduced the subject of his paper by referring to the present mode of making spoke wheels, in order to contrast it with his invention, and then proceeded to explain the *modus operandi* of the improved manufacture. Briefly the method employed is this:—In the first place, a straight bar of hammered or rolled iron is taken, about four inches wide, and sufficiently long to form a hoop of such a diameter as is most suitable to form the intended wheel. Other pieces of bar iron, laid flat and close together, and cut in lengths to the same circle as the hoop, are then taken to form the base of a "pile." The hoop is then placed upon this foundation and filled with scrap iron. The whole is then put into a reverberatory, or heating furnace, and when at the proper heat, is hammered to form a mould: the face of the hammer is recessed in such a shape as to form an approximation to the shape of one side of the finished wheel, but of a smaller diameter; the anvil face is flat. Two of these moulds are then put together, back to back, heated in a similar way, and hammered between tools of the same form and size as the finished wheel: but these tools embrace only a segment of about one fifth part of the entire wheel, and the mould is turned round during the process, and is thus hammered out to the form and size of the required wheel. The wheel is then put into an annealing furnace, and planished between similar tools of the form of the finished wheel. The wheel then only requires turning in a lathe and the centre boring out. By this mode Low Moor, or any other description of iron or steel, can be used for the tyre of the wheel, and thus in all cases ensure a clean wearing surface and a compound character of fibrous and granulated iron, which it is believed no other present system of making wheels affords.—The paper having been read, the CHAIRMAN said he thought that the thanks of the meeting were due to Mr. Smith for his very interesting paper, and he therefore moved that they should be voted to him. The motion was carried by acclamation.—In answer to a question by the chairman, as to the cost of the wheel, Mr. SMITH remarked that he would be happy to put himself in competition with other parties. He had already made 200 of these wheels, and the one before the meeting had been made that day. When struck with a hammer, the sound given out was clear as a bell, showing the perfect soundness of the wheel, and the closeness and unity of the material. The hammer used in the manufacture was 9 tons; the weight of the wheel, 44 cwt. Some of the wheels are at present at work on the Bromsgrove line.—The CHAIRMAN remarked that it occurred to him, as the body of the wheel was not so soon worn out as the tyre, and as when it required renewal, a secondary process, so to speak, would have to be gone through, it was both troublesome and expensive to forge the tyre on. Why not make it a disc, without this expense and trouble?—Mr. SMITH remarked that it was no more trouble or expense to make the wheel with the tyre than without. It was easily done. To those who had to tyre the wheel again it would certainly be a little more troublesome, but he considered that the iron, forged as his was, was much more durable than any rolled tyre, and the friction of breaks would affect it less.—Some conversation then arose as to the merits and defects of cast-iron disc wheels, Mr. BRYER inclining favourably to cast iron; but in answer to a question by the Chairman, he said he should not prefer cast iron, only he could never understand why such wheels were not more used.—The CHAIRMAN remarked, that in rapid railway travelling, they must all admit, as a body of engineers, that wrought-iron was better than cast-iron for such purposes. He thought that in Mr. Smith's wheel it would be preferable if the tyre was left out of the question, the disc being forged, and the tyre put on afterwards.—Mr. SMITH urged that the cost of making the wheel would be less if the tyre was forged solid with it. The tyre would wear longer than the ordinary tyre, and it was a matter for consideration whether the additional safety it gave was not worth a little extra expense in first re-tyring.—Mr. ALAN, of Crewe, remarked that the disc part of the wheel would be almost everlasting: it would last 100 years.—The CHAIRMAN said that he was of opinion that the invention was a very excellent one, leaving the question of tyre out altogether. He considered that the railway world was very likely to be greatly indebted to Mr. Smith, for his excellent wrought iron disc wheel, and he saw no reason why it should not come into extensive use. He had some doubt whether it was desirable or essential, for the sake of a small amount of additional safety for two or three years, to incur the expense of forging the tyre on the wheel. He did think that the mode of manufacturing the wheel was highly interesting, and it was a triumph in forging that he was not prepared for.

CONSTRUCTION OF PERMANENT WAY.

The SECRETARY then read a paper contributed by J. W. Hoby, of Brighton, on this subject. This was an elaborate paper, in which the writer, by analysing examples of existing modes of construction, attempted to arrive at a practical conclusion as to the best method. The conditions required, and with a view to which the deductions were made, consisted of the following:—Sufficient platform or bearing surface on the ballast, to prevent the whole road from being crushed down into the ballast. Sufficient bearing surface of the various parts, one on another, to prevent their crushing into each other. Sufficient cross ties to secure uniformity of gauge between the two rails composing one line of railway. Sufficient side stiffness in each rail. Sufficient strength, quality, and shape of materials, to prevent their crushing into themselves. And economy and simplicity of construction.

The CHAIRMAN moved that the thanks of the meeting be given to Mr. Hoby, for his interesting communication, which were accordingly passed.—Some discussion then arose as to the sufficiency of the wearing surface of rails, and to the decay of the permanent way. With reference to the last subject, the CHAIRMAN observed that on the old railways, which had been opened 12 or 14 years ago, the deterioration of the rails had been greater during the last three years than the first three years of that time. But he considered that the present heavy engines should not bear all the charge of that deterioration, inasmuch as the line was getting old, and the older it got the more rapidly would it deteriorate.—Several new members were declared to have been elected. In consequence of the advanced hour, the consideration of Mr. Ramsbottom's paper, on an improved locomotive boiler, was postponed to the next meeting. After a vote of thanks to the chairman, the proceedings terminated.—*Birmingham Journal*.

EXPLOSION IN STEAM-BOILERS PREVENTED BY ELECTRICITY.

On Thursday last, Mr. ARTHUR DUNN delivered a lecture on this interesting subject, at the City of London Literary and Scientific Institution, Aldersgate-street. The lecturer commenced, after alluding to the general importance of the subject, by observing that all were aware of the frequent occurrence of these fatal steam-boiler explosions; the evils of them were not merely confined to the destruction of life and property, which were unavoidably its concomitants, but, unfortunately, they were attended by a subsequent loss, which, though not so fatal in its effects, was productive of great injury to the working classes, as but few cases occurred which were not followed by numbers of operatives being thrown out of employment, and, in some instances, weeks elapsed previous to the injury being so repaired that they could again resume their avocations. Mr. Dunn gave here an account of the several explosions which had recently occurred, particularly referring to the late one in White-chapel. A few days after the explosion, with the permission of Mr. Keys, he had inspected the remains of the boiler; he had been told by several men on the establishment that not ten minutes previous they had passed the boiler, and to them it appeared to be sound, and no danger to be apprehended; he had minutely examined the boiler-plates, which were of the usual thickness, so that in that case there could be no ground to imagine that the boiler was unsound, or out of repair, being $\frac{3}{4}$ of an inch in every place where the plates were torn.

He did not profess to prevent accidents to unsound boilers; a defective boiler may cause an explosion, but it is the explosion of sound boilers that is most to be dreaded; boilers that are unsound give way at some faulty place, and consequently, burst at their ordinary working pressure, and do not commit the fearful havoc that generally follows the explosion of sound boilers. In America steam-boiler explosions were of more frequent occurrence than in England; but he was happy to state that the Government of the United States were making inquiries, and taking steps, with a view to further legislation for their prevention, should it be deemed proper, and he trusted the day was not far distant when our Government would follow in their wake. According to the statistical accounts laid before Congress, it appeared that from 1816 to 1848 inclusive, there were—Explosions in boats, 233; passengers killed, 140 (enumerated in 6 cases); officers ditto, 57 (in 31 ditto); crew ditto, 108 (in 25 ditto)—while the general estimate of the total loss of life and property calculated from the average of the given cases was—Pecuniary loss, 238 cases, at \$13,392 each, equal to \$3,099,936. Loss of life at 11 each, 2563; wounded at 9 each, 2097—making a total of killed and wounded, 4660; this average, however, is not a fair one, as it is derived from but six cases, in one of which (the *Pulaski*) the very unusual number of 120 lives were lost.

Steam boiler explosions were caused either by over pressure, want of the proper quantity of water, and over temperature; the two first resolved themselves into the latter, which was the sole cause of the explosions. It was a singular fact, that boiling water when placed on red-hot iron ceased to boil. The celebrated chemist, Klaproth, had read a paper on this to the French Academy of Sciences about 1802, though this discovery had taken place some time previously. [Mr. Dunn here successfully illustrated the experiment by pouring boiling water from a vessel into a round iron saucer, made red-hot by means of a spirit lamp.] Mr. Grove had decomposed water by heat alone; it required for that purpose an intense white heat. Freed from atmospheric air, it could be heated above its ordinary boiling point without generating steam; Donny had made several experiments which had proved this. If covered with a stratum of oil, this would occur. A practical proof of this he had experienced but a short time since. He had a small quantity of water in a common Florence flask; this was covered with a slight stratum of oil. A spirit lamp was placed underneath it; but before any steam was generated, or the least warning given that it was at boiling point, it exploded—the water being thrown to some considerable distance. Inventions have at various times been brought before the public—such as whistles, and various indicators attached to pressure gauges also self-acting valves. All are dependent upon steam pressure, and not temperature, and as liable to get out of order as the valve generally used. He

had first thought of this invention some years since when in America. He was engaged in experiments to dissolve silica in close boilers under the action of caustic soda lye; this caused such an incrustation on the valve, that it was firmly cemented into its seat, and, consequently, rendered useless. To obviate this difficulty he had recourse to the use of a common thermometer, plunged into a mercury chamber; this led him to the idea of constructing a thermometer which should indicate any given temperature by audible signals.

Mr. Dunn here exhibited a handsome model of a boiler with the tubes; to these were attached copper wires, which communicated with bells placed at different parts of the lecture room. On the rising of the mercury by an increased temperature, the electric circuit was completed and signals were immediately given, proving that the boiler was getting beyond its proper working temperature. Diagrams of different sections of the boiler were likewise shown, and fully explained. If this invention was generally in use explosions could invariably be avoided, as the moment there was too high a temperature the boiler would signalise, and it would then be the place of the engineer to discover where the fault lay. He could not believe that any man would be so foolishly hardy as to neglect a boiler, after it had plainly told him there was something the matter with it.

The principal points in the invention were its unerring action, trifling cost, and its dependence entirely upon temperature. The signals could be made at any number of places at once; a bell could be fixed in the engine room and the office; it was applicable to all boilers; the captain in his cabin, or the manufacturer in his counting-house, could rest satisfied his boiler was working safely. From the simplicity of the invention it is not liable to get out of order; signals such as pistons, detonating caps, &c., may be used; but as damp might affect these he had preferred the simple action of the bell. It could be applied to the steam gauges now in common use; but these could not be recommended, as they were dependent upon pressure instead of temperature, which is the only secure criterion of safety. There was no difficulty in keeping the batteries in action. He had a boiler in use with this apparatus for five months, and on two occasions had proved the practicability and utility of his invention.

The result of his practical experience had convinced him that the sole cause of explosions was a carelessness with regard to the temperature—no one ever knew a boiler to explode without a fire under it; he trusted that his simple invention might be a small means of preventing these dreadful accidents; his invention was now before the public to stand on its own merits and demerits, all that he demanded for it was a "clear stage and no favour." Mr. Dunn likewise exhibited a gauge, to control by electricity a required amount of pressure, so that if 10 lbs. were required, and 15 lbs. were shown on the gauge, the signal was made so that the engineer might reduce it to the required amount. An explanation was then given of the method of obtaining motive-power to ring the bells by the large magnet, which is well known by those who are aware of the system by which the electric telegraph is worked. We regret our limits have not allowed us to follow Mr. Dunn more fully, but we trust at an early opportunity to see his boiler in action, when we shall give a more detailed description of its merits.

TELEGRAPHIC EXPEDITION IN AMERICA.—We understand that, on Saturday, the 7th April last, the whole of Messrs. Baring's trade circular, containing 1300 words, was written and conveyed from Boston to New York in 45 min.

The Baltimore Telegraph Company, on the 13th April, declared a dividend of 4 per cent. out of the proceeds of the previous three months' working.

THE ELECTRIC TELEGRAPH.—We called attention in our Journal of the 28th April, to the outrageously extravagant terms which the Telegraph Company impose on the public, and the necessary consequence resulting from exorbitant charges, either by individual tradesmen or public companies—the loss of business by the former, and the indignation and neglect of the public in the latter, to whatever useful purposes the company may have been established. We have since received considerable information on the charges and working of the American telegraphs; and from the smallness of the former, and the general civility and accommodation afforded in the latter, all the American lines of telegraph have already paid dividends exceeding those of other enterprises of ordinary stock. The charges for messages of ten words are as follow:—New York to Boston, 50 c.; New York to Philadelphia, 25 c.; Baltimore to Washington, 10 c.; Washington to New Orleans, 150 c.; Baltimore to Cincinnati, 90 c.; Baltimore to St. Louis, 135 c.; Baltimore to Philadelphia, 25 c.; Philadelphia to Washington, 30 c. The first, New York to Boston, may be taken as an average, the distance is 200 miles, and the charge in English money is 2s. No wonder that the telegraph should have made such rapid strides, or that it should be still rapidly extending in all parts of the Union. We have before us a list of 27 distinct systems of telegraphs—the longest of which is from Washington to New Orleans, a distance of 1716 miles, and the aggregate being 6768 miles; these are all in daily use, and there are several in the western states which were to have been completed in all last year, extending over several hundred miles. Another line is under construction from Fredonia to the city of New York, passing through 17 towns, a distance of 500 miles, which will make a continuous line from New York to Milwaukee, in Wisconsin. Another is making from Bennington, Vermont, via Pittsfield and Litchfield, Massachusetts, which connects the New York and Boston line at New Haven, forming a continuous line from Bath, in Maine, New York and Boston to Montreal, in Canada. Another line will extend from Portland, in Maine, through eleven towns to the head of the Bay of Fundy, and to Halifax, in Nova Scotia; and other lines are in operation from Columbia to New Orleans, from Baltimore to New Orleans, and from Troy to the city of New York.

MINING IN NORTH WALES.—We are now very commonly receiving actual attestations of the abundance of mineral riches contained in the high slate districts of the principality. Gold, silver, lead, copper, iron, manganese, plumbago, slate, &c., are there being wrought with the most signal advantages. The natural facilities both for the discovery and working of the mineral lodes are very great, chiefly owing to the drainage afforded by the broken and precipitous character of the mountain ranges, and the well-known fact, that most of the lead veins, &c., carry ore up to the very surface of the earth, particularly in Cardiganshire, and other of the more central districts—thus forming a striking contrast to the generality of the mineral veins of Devon and Cornwall. Very recently, on a grant, extending under 1500 acres of land, situated about eight miles east of Dolgelly, Merionethshire, the property of Thomas Hartley, Esq., of Llwyn, a remarkably fine strong lode of silver-lead ore has been discovered, and which presents every appearance of equaling, if not surpassing, in yield and value some of the best veins of ore which, during the last few years, have been developed by successful enterprise in that previously much neglected neighbourhood.

ORCAID DU SLATE COMPANY.—We are glad to hear that the directors of this company are at last bestirring themselves, they having engaged Messrs. Brunton and Smith to conduct their engineering proceedings, under whose able management the resources of the quarry will, doubtless, be fully developed. It is proposed, we understand, to connect the quarry with the Port Madoc Railway, thus removing a disadvantage under which the quarry labours.

THE MINERAL DISTRICT OF ST. AUSTELL.—The sett and materials of Rocks Tin Mine have recently been purchased by a highly respectable and opulent company, from that great northern focus of manufacturing and commercial enterprise, Manchester. The mine is situated in the parish, and about four miles from the town of St. Austell, close to the new Bodmin and St. Austell turnpike road; it lies on the granitic uplands of the important metallic and mineral mountain range of Henborough, and adjoining to the once rich and prosperous tin mine of Beam. The sett is an extensive one, and with the application of modern Cornish mining skill, combined with a judicious and liberal outlay of capital, which its present proprietors are quite prepared to adopt, we hope, at no long distance of time, to see it become one of our leading county tin mines. Its re-working is hailed with great satisfaction by the tinners and industrial classes of the higher quarter of St. Austell, Roche, and Luxulyan, who, in common with the miners in other parts of the county, have suffered severely from the late prostration of our mining and other mineral interests, combined with the continued failure of the potato crop, which, to the frugal, industrious, and exemplary cottiers, has been an incalculable loss. The superintendence of the concern devolves, we hear, on that energetic and successful manager, Mr. T. Bell, of St. Austell, agent of the Great Folegoth Tin and Copper Mine. The ancient tin stream works of St. Austell, and the adjoining parishes, are now getting nearly exhausted, after unknown centuries of active exploration. Nature, however, all bountiful in her resources, leaves ample supplies of tin in store in this district, but it can only be procured by mining instead of streaming, as anciently, and by means of that mighty modern agent, the steam-engine. With this agency the supply of tin in this locality is probably almost inexhaustible, and is diffused in lodes of greater or less extent and richness in both the granite and clay-slate formation. It is a generally received conjecture that the hardy Syro-Phoenician mariners of the early Assyrian dynasties, during the palmy reign of Judea's king, Solomon, visited Cornwall for tin. Be that as it may, it is a well ascertained fact that our Cornish tin trade is of extreme antiquity, and takes early precedence far beyond that of any other of our British metallic or mineral exports. The singularly interesting parish of St. Austell abundantly confirms this assertion. Hundreds of acres in many of its romantic glens and valleys are now covered with ancient hedge-row timber, blooming orchards, and luxuriant meadows, productive garden ground, and flourishing plantations. The soil of these is composed of mountain debris and alluvium, and has evidently in by-gone ages been again and again ransacked and disturbed by the stream tinner's pick-axe and shovel. The whole of the valleys and moors of this extensive parish (at least all those whose water courses derive their source in the granitic highlands) have apparently once been streamers' stents or workings; and in the granitic uplands, where, from a high sea-level and the paucity of alluvial soil, it would not pay to cultivate the land, it still retains its upturned chaotic confusion. In the noble parish church of St. Austell, which, from its florid Gothic architecture, is supposed to date from one of the latter Henries, ancient carved stream tinner's insignia exists—viz.: the "pick, the shovel, and the boulder-bowl," thus showing that those primitive surface miners must have contributed to its erection.—*West Briton.*

THE MINES OF IRELAND.*

During the heavy labours of preparing for the press a work that I thought of much national importance, and which is now ready for publication, being entitled *The Progress and Policy of the English Pale in Ireland, fully Illustrated in the General History of the County Kildare, and Verified by Annals and Records, with Dates and Authorities*, my attention was invited to the mines of Ireland. It is asserted, that no country in Europe, except Saxony, abounds more in metallic productions; in the belief of which our celebrated chemist, Richard Kirwan, laboured for several years to obtain the concurrence of Government for establishing a board of mineralogy, to investigate these alleged mineral treasures, and to direct operations and workings thereof with certainty and economy. Out of the 32 counties of Ireland, 19 are reported to contain iron, 17 copper, 18 lead, and 16 coal; but, without yielding to any of the speculative enthusiasm by which Irish hopes are too often misdirected, I shall beg leave to submit some facts upon the subject, without note or comment. When I had gathered in all the annals that of certainty related to the county Kildare, I was anxious to embellish them yet more by other notices, which, though not identified with it by precise denominations, might yet, without any overstrained covetousness, be introduced as influentially applicable; and, with this impression, I was happy to encounter, in the earliest of my inquiries, the following notice of the Four Masters respecting gold mines, and referring to A.M., 3656, in their chronology:—"In this year gold was first wrought by Tigernmas, King of Ireland, in the woods eastward of the Liffey; Uchadain, of the men of Cualan, was the artificer who first worked it, and by him were ornaments of gold and silver first made." The Liffey runs to a great extent through this county, entering it from that now called Wicklow, then Cualan; and O'Flaherty, in the *Ogygia*, yet more particularly states this mine to have been manufactured in that part of Cualan, called Fothart, and on the eastern bank of the River Liffey; while Ballymore Eustace, a town now included in the county Kildare, stands in ancient Fothart, and on the eastern bank of that river, suggesting, not lightly, that its vicinity might have been the California of the tradition which the Irish historians preserve. The annals of the Four Masters were compiled in the early years of the seventeenth century; and it is worthy of observation, that while they record that in A.M. 3872, King Monamon caused "colours of gold" to be manufactured for the petty kings and queens of Ireland, and the museum of our Royal Irish Academy verifies the voice of history, by the numerous gold antiques of admirable workmanship which it exhibits, and which are confidently classed as of Pagan days, and of native material and manufacture, the narrative might yet be deemed wholly apocryphal, and, perhaps, relied upon as impeaching the authority of the whole work down to the close of the eighteenth century; but then it was that in 1775 native gold was accidentally found to occur in the bed of the rivulet that descends from the northern banks of Croghan-Kinsella Mountain, south of the place which the above tradition would seem to designate, but still within the same territory of Cualan or Wicklow. The discovery led to mining operations, which were feebly continued for some few years; but, as Sir Robert Kane says—"Neither the intelligence nor the energy necessary for success in such undertakings appears to have been applied;" while he adds, that at other localities of the same glen gold has been found.

The inquiry, thus induced for the object of my history, was willingly extended to a more enlarged consideration of the mineral resources of Ireland, and the evidences by which they are avouched. At the present awful crisis in the destinies of this country, every project should be attentively considered, that would promise employment for the labouring classes of this portion of the empire: it may not be adequately remunerative in every instance, only let it not be wasteful, or detrimental, and I hope its details will be permitted to remain in your columns. In A.M., 3817, say the same Four Masters, King Ennius caused silver shields to be forged at Argiodross, in the present county of Kilkenny; while another Ennius, surnamed Dery, "the red," is by some stated to have caused silver to be coined at the same locality, but the Masters do not adopt this latter assertion. Passing into the sixth century of the Christian era, the biography of the early saints of Ireland records, in that and the immediately succeeding centuries, various works of native art in metals, and many such are still surviving in the aforesaid museum. Croziers and crosses, beautifully carved, and evidencing that they were once inlaid with gold and set with gems, vases of silver for ecclesiastical uses, reliquaries and shrines of gold and silver for bones of saints and copies of the gospel, bells and cups, gold rings and bracelets, are numerous in the same repository. In the ninth century Donatus is supposed to be the author of a *Description of Ireland*, in which it is styled *insula dives opum, gemmarum, vestis et auri*; and Nennius expressly writes of Lough Lene (the upper Lake of Killarney) that it is surrounded by four circles—the first of tin, the second of lead, the third of iron, and the fourth of copper. Modern discoveries have singularly confirmed this account also; indications of lead, and I believe, of iron, have been observed about the lake; and of the copper, Smith, in his *History of Kerry*, says—"Few mines in Europe have produced such a quantity of copper ore as that work lately discovered at Mucruss, near Killarney, having afforded, in the year after its working, 37½ tons of ore, which produces, from an ounce of the general sample, 5 dwts. 8 grs. of copper, and single pieces of pure copper have been raised there of several hundred-weights." Yet this valuable mine, and that at Ross Castle, adjacent, were deserted about 50 years since as in despair; but, on the application of steam in later days, have again proved most productive. The *Annals of Ulster* say that pearls were found in the above lake, which kings hung in their ears; and pearls, it may be here mentioned, are also said to be found in Lough Corrib, county Galway.

In the year 1276, a silver mine in Ireland was ordered to be opened and worked, and another royal silver mine is spoken of in the year 1289, and a record of 1303 further proves that the attention of our English sovereigns was early directed to the development of the mines of this country. "One of the king's miners in Ireland," it recites, "having killed a man, his companions were afterwards beaten, and their mines filled and broken down, so as they were forced to quit them, whereupon they preferred their complaint to his majesty, who ordered a commission to inquire into the circumstances, and do them right." Thirty-one years after another commission was directed to investigate the Irish localities where mines existed; and in 1360 certain persons were appointed to explore the mines of gold and silver in Ireland, "because," says King Edward, in the language of the writ, "it is given to us to understand, that many mines of gold and silver exist in that our land." Henry VI. projected, at the commencement of his reign, authorising an examination of such mines here, and the assaying and smelting of the same. In 1458 the mines of Clomeen, in the county Wexford, were the subject of an Act of the Parliament of Dublin (unprinted). The State papers, in 1543, relate a very active search for Irish mines made by Thomas Agard, under the authority of the Lord Deputy St. Leger; and in 1546 a proposal was entertained at the council board for effectuating their workings by an incorporation under his superintendence. "There are in Ireland," translates Holinshed from Stanishurst, "such notable quarries of marble, such store of pearl and other rich stones, such abundance of coal, such plenty of lead, iron, slate, and tin; so many rich mines furnished with all kind of metals, as Nature seemed to have formed this country for the store-house or jewel-house of her chiefest treasure. Howbeit, she hath not showed herself so bounteous a mother in pouring forth such riches, as she proveth herself an envious step-dame, fit that she instilleth in the inhabitants a drowsy listlessness to withdraw them from the insearching of her hoarded and hidden jewels." Boate, in his *Natural History*, assigns another cause for the neglect of the Irish mines—"The old English in Ireland (that is, those who are come in from the time of the first Conquest until the beginning of Queen Elizabeth's reign) have been so plagued with wars from time to time, one while intestine among themselves and another while with the Irish, that they could scarce ever find the opportunity of seeking for mines or metals." The same historian says, on authority that he thinks credible, that gold has been found in a rivulet called Miola, in Ulster, brought down, as he considered, from some mine in the mountain Slieve-Gallen; and the Irish newspapers of 1759 announce indications of a gold mine, as in Inchmore, an island of the Shannon.

Of the silver and lead mines, besides the tradition of the Four Masters, relating to Argiodross, it is to be noted that there is in the Vice-Treasurer's office, "An account of lead and silver made in the royal mines in the county Tipperary (of which was also preserved a description with maps), out of which the king is to have the sixth part of the lead, and the tenth of the silver, for the year to Christmas, 1638;" and another similar account for 1639, in which latter year Lord Strafford transmitted to King Charles an ingot of silver hence, which weighed 300 ounces, writing at the

same time to the Lord Treasurer, that "the king's duty forth of the royal mines here will be 500l. per annum." This mine was announced, in 1712, as "now brought to good perfection," and is to this day usefully and productively worked, giving the name of Silver Mines to the locality. The "Examinations of John Bealing, locksmith, touching a silver mine in Ireland," taken in 1607 and preserved in the British Museum, probably relate to this of Tipperary. Native silver has also been found, says Sir Robert Kane, in Wicklow, near the copper mines. Wakefield mentions a silver mine as once worked beside Williamstown, in the county Kildare, which seems identical with that reported in the *Dublin Chronicle* of 1787, as then at work near the Chair of Kildare. Indications of silver are said to have been also traced in the county Wexford. "There are lead and silver mines in the county Antrim," says Boate, "so very rich that every thirty pounds of lead yieldeth a pound of pure silver;" he also mentions a lead mine in Coney Island, off Sligo. In Faulkner's *Dublin Journal*, of 1784, "lead and silver mines of fair promise" were stated to exist on the estate of Henry Bond, at Derrynoose, county Armagh; Wakefield notes indications of lead at Keady, in the same county, at Dundrum and Clonlegg, in the county Down; at Ardmore, near Waterford; and near Enniscorthy, in the county Wexford. Lead ore has been found in the county Galway, near Lough Corrib, near Oughterard, on the shore of the Bay of Galway, and in that now promisingly productive expanse, the Connemara Mountains; as also at Grange-hill, in the parish of Feighcullen, county Kildare. Lead mines have been, and some are still, worked in the county Clare, at Kilbricken and Ballyhickey; the Bond and Newry Mines in Monaghan; in the county Wicklow, at Glenmolaur and Glendalough; and in the county Dublin at Dunsink, at Dalkey, at Ballycorus, and in the demesne of St. Catherine's; while indications of lead were also here found at Castleknock, Cloughran, Naul, over Clontarf town, near Crablough, and near Killiney Bay; the last was said to contain much silver.

Of copper mines, those at Mucruss and Killarney have been spoken of, and other veins are said to be traceable in Crow Island and at Glanlesk in this vicinity, as are veins of lead and copper at Miltown, in the same county (Kerry). In the elevations, called the Red Hills and Hills of Allen, in the county Kildare, a copper work was opened in 1786. The principal bed seemed to lie deep in the hill, and even to dip under the valley that separates Dunmurry from the Hill of Allen. Operations were, however, perhaps prematurely discontinued. The latter hill was considered to promise not less productive masses of copper. Mines of this mineral have been worked at Lisnace, near Carrickmacross; at Knockmahon, in Waterford; at Dunsink and at Lough Shinney, county Dublin; and at Glan Mountain, in Oughterard—while indications of copper have been noted at Ballyroan, in the Queen's County; also in the vicinity of Gort, county Galway, and at sundry localities in the counties of Cavan, Cork, Kerry, Donegal, Down, and Leitrim. In 1764, "a strong course of rich copper ore" was reported as found at Cashell, near Slane, county Meath, "whence great expectations are formed, because the discovery is made in fresh ground, where the vein has no dependence on, or connection with, old workings there, which have been under water between 20 and 30 years." Last, but perhaps the most remunerative, must be mentioned—the existing and thriving works of Cronbane and Ballymurtagh, with those of Cronroe and Ballygahan, in the county of Wicklow, and those of Holyford and Lackamore, in the county Tipperary.

Iron mines were formerly worked in the parish of Templecarne, county Donegal; near Tallow, "being the Earl of Cork's iron-works;" at Donbilly Mountain, in the county Cavan; by the Lisban, in Tyrone; at the foot of Slieve Gallen; near Mount Mellick, in the King's County; near Mount-rath, in the Queen's; in the county Clare, six miles from Limerick; by the side of Lough Allen, at Arigna; and in Slieve-an-Erin, county Leitrim. Iron is also found in the counties of Kerry, Sligo, Mayo, Waterford, Wexford, and Wicklow. There are extensive beds of copper and iron on the estates of Lord Audley, in the county of Cork; and iron-works, which were considered valuable, have been worked in the county Mayo, near Lough Corrib, uninterruptedly, until the timber of the vicinity was exhausted.

Of the coal mines, not the least important for consideration, various fields are said to exist, as in the county Antrim, at Rathfriland, at Mount Charles, in Donegal; at Drumquin, Drumglass, and Coal Island, in the county Tyrone; at Pettigo, in Fermanagh; near Carrickmacross, in Monaghan; near Belturbet, in Cavan; near Athlone, in Westmeath; near Slane, in the county Meath; at and around Arigna, county Roscommon; at Clonmore, county Mayo; at Knockmahon Hill; at the Naul, and near Lough Shinney, in the county Dublin. Of the latter, the petition of a Martin O'Connor, of Silver Mines, to the Irish Parliament, in 1740, and which is now before me, gives the following testimony:—"The petitioner has discovered sea coal, of the same nature as at Whitehaven, on the land of Miss Turner, and also upon the adjoining estate of Sir T. Echlin, Bart., bordering on the Channel, and within a short sail of the city of Dublin, in a district which, from the beginning of time, has stood destitute of all kind of native fuel; whence a colliery, to be brought to perfection in a place thus circumstanced, and so favourably situated for carriage, must prove of singular advantage to the whole nation, and to the city of Dublin in a more especial manner." The Leinster coal district, in the Queen's County, the counties of Kilkenny, Carlow, and Tipperary; and the Munster, in those of Clare, Limerick, Kerry, and Cork, are fully treated of in Mr. Griffith's *Geological Reports*.

I shall close this article with an address to the gentlemen and others of Ireland, which, though 120 years old, is not obsolete in the quality of its advice. It is signed by Benjamin Lund and Francis Hawksbee, dated at London, Jan. 9, 1728-9, and may suggest much serviceable counsel, and some of the causes why the operations of many of our native mines have been unfairly deserted. It recites letters patent granted to these individuals by George II., "for the sole privilege of manufacturing copper ores, extracting of silver from copper, making of brass, also of separating iron from ironstone with peat, natural coal, or coal charred, and to make thereof malleable iron;" and "whereas we purpose not only to work mines for the ore barely, but also to erect proper work-houses, with all the requisite appurtenances of various kinds, for the manufacturing of ores and minerals raised in that kingdom, and whereas a much greater advantage will accrue to that country by such manufactures being raised and carried on amongst themselves, and by their own people, than can possibly arise to them by barely working of their mines, and sending their produce to be manufactured elsewhere. Now, as we have good reason to believe that there are some people concerned in the brass and iron manufactures, who will use their utmost endeavour to frustrate this intended good undertaking, we write and publish this by way of caution to all the gentlemen and others in Ireland, on whose estates mines have already been found and worked, or to such on whose estates it is probable that mines or minerals may be hereafter discovered, in order to prevent their making any unwary agreements with those, who would only purchase their ores when raised, and carry them to another place, in order to the working and manufacturing of them, or who will, by keeping such mines in suspense and unwrought, not only greatly prejudice this undertaking, but also in particular all those who are possessed of mines." Believing that in this gloomy hour of my country's destiny, any suggestion of an extensive field wherein its able-bodied poor might, if not remuneratively, at least not wastefully, obtain continuous employment, should for the safety and happiness of the empire be well considered, I feel confident you will give this paper insertion in your next publication, and I trust it will interest the well-wishers of this suffering country.

JOHN DALTON.

48, Summer-hill, Dublin.

P. S.—Since writing the above, a document of most gratifying encouragement towards the object of my communication, and your promptness in promoting it, has been forwarded to me, and I am proud to be the medium of first announcing it. It is the report of a miner, of 30 years' experience in Wales and Ireland, on an inquiry which he was employed to make during the last week "as to what coal, or other mineral productions, existed on the estate of Mr. Phillips, at Clonmore (above alluded to), in the barony of Costello, county Mayo; and to report on the nature and probable extent of such mines, and the facilities for working the same." Being accompanied by the inheritor and others to the place, where a pit had been sunk a few feet below the surface, he says—"I am of opinion that there is a most extensive and valuable coal formation existing under a very great portion of this estate. My examination has also convinced me that there exists under the said lands, to a large extent, all the minerals and materials necessary for the making and manufacturing of iron. The coal is of very good quality, of the anthracite species. I have dug it out of the ground with my own hands, and deposited samples of it in Dublin (as particularly described). There is also limestone on the spot in abundance; and, from the great quantity of oxide of iron existing and mixing with every rivulet of the locality, it is evident that ironstone, simi-

* From the *Gentleman's Magazine* for this month, May.

It will state what ensued with respect to one of the most extensive mines in Ireland, which will fully explain the effect of the Irish Poor-law on Irish mines. In the year 1847, the mine was assessed at a value or profit of 8000*l.* a year, and a rate of 3*s.* in *l.* was struck on that value, amounting to 1200*l.* The adventurers appealed; they showed the accounts for the year 1846, from which it appeared that the mine was worked at a loss of nearly 4000*l.* The persons who were to decide the appeal were convinced of the correctness of the accounts; and you would suppose that the mine would be discharged from all rate, as the adventurers were to pay it, instead of which they still insisted on a value of 8000*l.* a year, and on that amount the adventurers continued to be rated. The loss in 1847 has been about the same; and, in the last year, there was still a loss. The lords have been, for each of the three years, receiving a royalty of near 4000*l.* How can it be expected that adventurers will embark substantial mining speculations in Ireland when they are subjected to so

heavy a tax, from which they are totally free in England? Lord John Russell's object appears to be to fix permanent assessments for the relief of the poor; but the absurdity of making permanent assessments of mines must be evident to all who are acquainted with their nature. Instead of holding out the encouragement you propose for working mines in Ireland (and they would be the greatest source of employment of the population of the country), the Government seem to be throwing obstacles in the way.

Tenby, May 7.

ANOTHER ANGLO-CELT.

SPEARNE CONSOLS MINING COMPANY.

Sir,—A statement of Spearne Consols account of the 30th of April having appeared in the *Mining Journal* of last week, wherein only a "balance of 3557. 13s. 10s." was shown in favour of the mine, I beg to remark that, had the usual method of charging the merchants' bills been resorted to—viz: two months' bills for two months' tin—the balance in favour of the mine would have been upwards of 4357. The adventurers, therefore, should have received 37. per share, and then upwards of 507. would have been placed to the credit of the mine. This matter you will more fully understand, when I inform you that our meeting was held for the months of January and February, yet all the candles were charged up to the end of April; and we were charged with a sufficient quantity of coal for our consumption up to the end of June! I am an old miner, but this mode to me is new and novel; therefore the dividend of 17. per share is a mere farce, and most unjust.

I herewith append a report of our general prospects in this mine:—"In the 116 ft. level, east and west of the engine-shaft, we are in good tin ground. In the 104 ft. we are in a good course of tin for many fms. in length; the ends are rich. In the 80 and in the 70 we are in good tin ground. Our 60 end is nearly in contact with Button White's lode—ground much improved for tin, and much softer. Our expectations are very sanguine as regards this part of the mine as soon as we meet the junction, as there is a fine course of tin in the bottom of the level above on the aforesaid lode. On this lode, in the 40 east, we have also a fine course of tin, which is in whole unexplored ground, no level having been extended above or below it; 14 men are employed here, who are paying the cost of the mine. In the 30 east, on the north lode, we have a good course of tin; and in order to make this available, we are in course of sinking the shaft under the 20, and expect to hole to the 30 by the end of next week. This scene of operation is quite new to us, and the sinking the shaft, fixing pulleys, stands, and 90 fms. of chain, &c. (which are all paid for), have hitherto been a drag on our finances; but in a month from this we expect to employ 12 men on tribute here, which circumstance will proportionally increase the monthly returns. The engine-shaft being sunk to the 116 ft. level, and the ends being very partially extended, there is every reason to believe that this mine will, under proper management, give handsome dividends for many years yet to come, even if the engine-shaft was to be sunk no deeper."

JOHN CARTHEW.

[We are well pleased to find that the pursuer has erred on the right side, although we perfectly agree with Capt. Cartew that, in making up the two months' cost, he has made it to appear that the mine is not in so good a state as she really is. The fault in nine cases out of ten—indeed, we might say, ninety-nine out of a hundred—is, instead of putting costs forward, arrears of cost are allowed to be incurred and neglected to the tune of thousands, until the day of reckoning comes, when all express their surprise on learning the truth. We have offered one or two remarks on the subject in another column; but hope Mr. Pearce, the pursuer, will be able to explain away the complaint advanced by our correspondent. There can be no question but that the two months' returns ought only to be chargeable with the ordinary two months' costs.]

TRANSFER OF MINING PROPERTY—ARE STAMPS REQUISITE?

Sir,—A question of considerable importance to the mining interest has been mooted, in consequence of the circulars lately issued by the Board of Stamps, in respect to the transfer of property in railways, and other joint-stock companies. It appears to me, as it does to those with whom I have conversed upon the subject, that the alarm, as it regards mines, is quite premature, though, perhaps, it would be as well to have the matter at once decided upon, and set at rest. It has been the custom, I may say for centuries, for shares in mines to be handed over from one party to another by a letter, or notice to the pursuer of the mine, to be entered on the cost-book of the partnership, and which notices, not only custom, but the Statutory Courts of Cornwall have always recognised as legal and valid. In the Joint-Stock Act, partnerships formed for working mines on the *Cost-book Principle* are exempted from its operations, and what is the *Cost-book Principle* but that which custom has sanctioned, and with which no Governments have attempted to interfere?

To my thinking, no notice whatever should have been taken of the circular; and I was surprised to hear that one pursuer, who boasts of more than the usual intelligence of his class, should have been the first to refuse one of these notices, which refusal, if taken as a precedent, would have the effect of stopping half the mines now at work, and doing incalculable injury to the county of Cornwall. The matter is of more importance in its various bearings upon the mining interest than the mere casual observer may suppose. No out-adventurer would hold shares in unpaying mines, or join in new undertakings, if the system of transfer was changed, and it was on this account, it is supposed, that successive Governments have allowed the system to go on, because a change would entail a great and lasting injury upon the Duchy of Cornwall, and on the mining interest in general, for which the receipt of a few paltry stamps by the Government would be but poor compensation. I trust, therefore, we shall hear no more of pursuers refusing the usual notices of sale. We have custom on our side, and it is quite time enough to quake when there is any real cause for alarm. If a man takes a partner into his business, he is not obliged to give him a stamped transfer of his share; and mining companies are partnerships to all intents and purposes, exempted from the laws and regulations of joint-stock companies, to which alone the notice from the Stamp Office refers—their circular commencing—"It being understood that on the sale of shares in railways, and other joint-stock companies, a practice exists," &c.

J. Y. W.

Cornwall, May 9.

ON THE ECONOMY OF MINING IN CORNWALL.

In perusing the *Mining Almanack*, I was much struck with the proposition of James Sims, engineer, in regard to a subject which occupied your columns some time ago—viz: the mode of setting the work in the mines of Devon and Cornwall; and while I agree with him in deprecating any system which would deprive the miner of a fair price for a fair day's work, I would even go further than he does in respect to the minimum of wages. But my object in writing this paper is to take an exception to the principle laid down by James Sims, to do the different work by "day-work" instead of "contracts," or, in other words, to make all the men "owners' account men." Now this system would, I believe, seriously affect the miners in a variety of ways, and tend to depreciate them, not only in their own estimation, but produce a degree of inactivity and carelessness which would be prejudicial to their character as men and labourers. If there is anything in the idea that it is the hope of reward which sweetens labour, surely such stimulus is more to be found in a system of contract than in the so much per day system—in fact, what is it that renders the miners of these counties such active and energetic characters, but the system of contracts. Now, in regard to profit and loss to the adventurers, I hold, even admitting the getting of "starts" now and then, that this very circumstance is advantageous to the adventurers. I would even go so far as to include a good take on latwork as well as tribute; it cheers the men, and makes their toil in some degree pleasurable, compared to the sameness of working on day-work, and no chance of doing better; but I go further, and say it would be almost impossible to work the generality of mines by "day-work"—what a number of extra agents, or gangers, would be necessary; what a waste of materials would ensue; instead of 6 inches of powder in the blast, there would be no calculation, but perhaps a waste of 50 per cent.; so it would be with the tools, timber, &c.—in fact, in everything. Then as to the saving the ores, the men would have no interest in a proper selection; quantities of rubbish would be left to mix with the "ore work," and an almost endless amount of mischief be the consequence, while, with the system of contracts, the men are interested in properly selecting the ore, and in saving materials, to the great advantage of the adventurers, lords of the mines, and labourers.

In regard to letting contracts, my plan has always been to give the men a suitable price for the ground as it appears at the setting-day, and letting them take the chance of its being harder or softer, richer or poorer, as it may happen; and as to taking pitches or bargains at 4d. per ton in 12, as much as possible shut up every inducement to do so, by acting on one uniform plan of only giving (to use a miner's term) "a fair price in light." Now, when this is regularly done, and systematically carried out, the men know what to expect; no sympathy is excited or enlisted, no false or contingent expectations are produced, but every man knows what he has to hope for, and is expected to proceed with his contract diligently, or else be discharged the mine; such I find by experience to be the most profitable to the men, to the adventurers, and satisfactory to all, whilst to do it all by day-work would reduce the reflecting miner to such a state of dependence, that he would soon need an agent to tell him at what part of the end he should bore the hole for blasting, or any other trivial matter that required an exercise of thought. I may take the liberty next week of noticing the remarks of P. N. Johnson, Esq., on tin dressing, &c. Tavistock, 6 mo. 7th.

MAGNETIC AND GALVANIC CURRENTS.—Although the sciences of magnetism, galvanism, and electricity have been effectually blended, and proved by various experiments to be the effect of one primary cause, the direction of the magnetic currents compared with galvanic currents is considered different, i.e., that the magnetic currents move at right angles to those of galvanism. This idea has arisen from the effects of the spiral course, in which the external current that envelops the connecting wire of a battery moves. On the upper side of the wire it moves towards the north-west, and on the under side towards the north-east; the amount of the variation depending on the intensity of the action, both diverging from and converging to the same poles.—*Hopkins's Geology and Magnetism.*

DEVONSHIRE GREAT CONSOLIDATED MINING COMPANY.

The annual general meeting of adventurers was held at the offices of the company, Barge-yard Chambers, Bucklersbury, on Monday, the 7th inst.

WILLIAM ALEXANDER THOMAS, Esq., in the chair.

The usual preliminaries having been gone through, the directors' report, and also that of Mr. J. H. Hitchens, the managing agent, were read, and received with evident satisfaction. **DIRECTORS' REPORT.**

It is with much satisfaction the directors meet the shareholders of the Devonshire Great Consolidated Copper Mining Company, at the fifth annual meeting of the company, to submit for their approval a balance-sheet, exhibiting the successful result of operations for the past year, and the finances in a most desirable position. It will have been perceived by a single glance at the balance-sheet—a copy of which has been duly forwarded to each shareholder—that the quantity of ore raised and sold has exceeded that of the previous year by upwards of 2167 tons—the average quality having been the same within one-eighth per cent.; while the proceeds realised for the same have diminished by about 30541.—an evidence alike both of the continued productiveness of the mines, and of the depreciation of the value of copper ore, which continued for several months—thus causing, comparatively with the higher price in value of last year, a deficiency of receipts of at least 17,5000. To meet this depreciation, and to maintain the independent position of the finances, in conjunction with a fair and legitimate division of profits, the strictest economy has been exercised in every department—due regard having been had to the effectual prosecution of the mines. The mines' cost sheets, far from having increased with the greater production of ore, will be found, on a more minute scrutiny of the balance-sheet, to have been less by upwards of 10,5000; while the division of profits has been just double that of last year. Great praise is due to those to whom this department is entrusted, and to Mr. Thomas Morris, our resident director, who has taken good care to avail himself of opportunities of selecting the materials both of the best quality, and in the best possible markets. Under such favourable circumstances, the directors have been enabled to declare dividends, amounting to 30,7500, and to retain in hand a reserve fund of 50000. Exchequer Bills, with cash and bills of exchange, amounting together in value to 17,257. 17s., applicable to the proper and vigorous prosecution of the undertaking and future division amongst the shareholders. The late acceptance of the company's liabilities, and the directors' decision to declare a dividend of 7. 10s. per share in this month. The balance of assets over liabilities, as shown in Part 2, amounts to 65,301.—being an excess over last year of 16,956. 16s. 1d. The directors beg to observe, lest exception might be taken to the valuation of machinery on a mine, which has been done in conformity with the requirements of the Joint-Stock Company's Act, they have preferred estimating it at the fair working value to the company—making due allowance for wear and tear, rather than the imaginary and doubtful value such property might realise in the public sale.

The recent arrival of Mr. Thomas Morris, our resident director, who has taken good care to avail himself of opportunities of selecting the materials both of the best quality, and in the best possible markets. Under such favourable circumstances, the directors have been enabled to declare dividends, amounting to 30,7500, and to retain in hand a reserve fund of 50000. Exchequer Bills, with cash and bills of exchange, amounting together in value to 17,257. 17s., applicable to the proper and vigorous prosecution of the undertaking and future division amongst the shareholders. The late acceptance of the company's liabilities, and the directors' decision to declare a dividend of 7. 10s. per share in this month. The balance of assets over liabilities, as shown in Part 2, amounts to 65,301.—being an excess over last year of 16,956. 16s. 1d. The directors beg to observe, lest exception might be taken to the valuation of machinery on a mine, which has been done in conformity with the requirements of the Joint-Stock Company's Act, they have preferred estimating it at the fair working value to the company—making due allowance for wear and tear, rather than the imaginary and doubtful value such property might realise in the public sale.

The increasing depth of the shafts, and the extension of the levels of the mines, have demanded a corresponding power of machinery. It has been the anxious desire of the directors to adopt that which would be at the same time most effectual and most economical. With this view they have consulted other engineers, as well as those of the company, and after careful deliberation, they have decided on adopting water-power in preference to steam-power—it having been satisfactorily proved by competent parties that a great annual saving would be effected thereby at a comparatively trifling increase of outlay. In order to carry out this scheme, the directors have obtained a grant of the use of the water of the River Tamar from the Duchy of Cornwall, and the works are now in active progress.

The directors having reason to be satisfied with the efficient mode in which the contractors for the carriage of ore have carried out their contract, offered to renew it with the same parties on still more advantageous terms, but the company have been accepted by them. During the past year, the directors have had the opportunity of receiving the reports of the inspection of the mines by Capt. Kitto, John Richards, and Davey (one of which was printed for the information of the shareholders), which are highly favourable, both as regards the value of the property and effectiveness of working. Mr. Josiah H. Hitchens has drawn up his report of the present state and prospects of the mines as usual, which will be read to the meeting. No application for the office of director having been made, the directors terminate this day by electing Mr. J. H. Hitchens, Esq., Joseph Deane Brown, Esq., and Michael Henry Williams, Esq., have signified their willingness to accept the appointment of auditors, if elected.

The following abstract statement of accounts for the year ending on the 1st of March was also presented, a copy of which having been issued to the respective shareholders three weeks previously, in accordance with the provisions laid down in the Joint-Stock Companies' Act:—

PART I.—Balance-Sheet of the Devonshire Great Consolidated Copper Mining Company, From March 1, 1848, to March 1, 1849.

RECEIPTS.	
Balance from last account	£ 14,033 14 9
Carriage of ores sold from last account, since received	972 18 7
Sales of copper ore, raised from Jan. to Dec., both months inclusive—16,595 (21 cwt.) 17 cwt. 2 qrs.—realising	£ 23,513 8 3
Carriage of the above	£ 708 6 0
Deduct amount outstanding on 1st March..	702 19 11—6,385 6 1—100,058 14 6
Fees on transfers of shares, new certificates, and discount on stamps	12 18 6
Interest on money lent	45 2 8
Interest on Exchequer Bills	71 17 6
Income tax deducted from dividends paid	£ 396 0 0
Gawton Quay, received in repayment of advances	222 19 0—1,118 19 0
Total	£ 116,538 5 6

Balance brought down

£ 11,983 7 6

PART II.—Balance-Sheet of the Devonshire Great Consolidated Copper Mining Company, From March 1, 1848, to March 1, 1849.

EXPENDITURE.	
Mines' cost, from Feb. to Dec., 1848, both months inclusive	£ 47,942 5 10
Dues on ores sold, from Jan. to Dec., 1848, both months inclusive	7,028 11 11
Mines' cost, for Jan., 1849, to Dec., 1849, both months inclusive	5,857 4 11
Timber imported for use at the mines	1,712 2 0
Iron purchased for use at the mines	1,228 9 8
Cost of two steam-engines and sundry materials for the same	1,111 19 10
Agent's commission on dividends paid	768 0 0
Salary of managing director at Tavistock, 18 months, to 31st Dec. last	900 0 0
Poor's rate and other taxes paid at Tavistock	1,044 17 3
Expenses, viz: Salaries of secretary and clerk, rent of offices, stationery, postages, plans of the mines, printing reports, solicitor's bill, and incidental expenses	£ 263 7 3
Compensation to directors and auditors, to 1st May, 1849	292 0 0
Income tax—yearly, to Michaelmas last	1,280 16 8
Unclaimed dividends, per last account	155 3 8
Dividends paid, 30s. per share on 1024 shares	30,720 0 0
Cost of 5000 Exchequer Bills	5,290 10 0
Balance—viz: Cash at the bank in London	£ 2308 9 9
Petty cash and stamps in the office	27 19 7
Cash in the hands of the managing director at Tavistock, on account of advances to him	200 0 0
Bills receivable	8749 6 2—11,983 7 6
Total	£ 116,538 5 6

PART II.—Balance-Sheet of the Devonshire Great Consolidated Copper Mining Company, From March 1, 1848, to March 1, 1849.

LIABILITIES.	
Mines' cost for February, including merchants' bills, estimated at	£ 4,000 0 0
Dues on ores sold 22d February	£ 678 9 4
Dues on ores for sale 22d March, estimated at	765 0 0—1,443 9 4
Miner's cost, for Jan., 1849, to Dec., 1849, both months inclusive	5,857 4 11
Salaries, rent, &c.	220 0 0
Balance carried down	66,201 0 0
Total	£ 72,356 2 8

ASSETS.

Copper ores raised in January, and sold 22d Feb., 1849, carriage included	£ 28,974 14 3
Copper ores raised in Feb., and for sale March 22, valued at	10,824 18 0
Miner's cost, for Jan., 1849, to Dec., 1849, both months inclusive	5,857 4 11
Hallways, lines, &c., valued at, less dues	3,564 3 4
Steam-engine and crusher—water-wheel and hauling machine, with their connections complete, at Wheal Maria—capstans, shears, rods, ropes, tramroads, &c.	4,585 9 0
Hauling machine and wheel, and grinder and wheel complete, at Wheal Fanny—capstans, shears and ropes, rods, pulleys, tramroads, waggon, &c.	3,290 3 0
Steam-engine, with connections complete, at Wheal Anna Maria—capstan and shears, pumps, sheds, tramroads, &c.	3,935 7 0
Steam hauling engine complete, at Wheal Josiah—capstans, shears and ropes, pumps, tramroad, tram-waggon, sheds, &c.	4,403 6 0
Steam-engine at Wheal Emma—capstans, shears and ropes, whins and ropes, pumps, kibbles, &c.	1,294 0 0
Air-pipes at Wheal Freimont, railroad, water-wheel, tram-waggon, &c.	635 0 0
Timber, iron, coals, nails, powder, stores, miners' and smiths' tools, and other stores in stock	3,846 7 5
Two horses, cart, gig, and harness	86 0 0
Counting-house furniture at the mines	250 0 0
Ditto in London	50 0 0
Amount outstanding for carriage of ores to 31st Dec., 1849—see Part I.	702 19 11
Balance of advances for Gawton Quay	413 17 9
Exchequer Bills in hand, 50000—market value	5,274 9 6
Balance per Part I.	11,983 7 6
Total	£ 72,356 2 8

Balance brought down

£ 66,201 0 0

Resolutions were unanimously passed, tendering the thanks of the company to the directors, managing agent, and other officers, for their excellent and judicious management during the year.

The manager's report, being of the usual voluminous and elaborate character, and accompanied with extensive tabular matter, is, we learn, in course of being published in the form of a pamphlet, by the direction of the board, for the general information of the shareholders. From the pre-eminent position which these mines take—their unrivalled stand and general importance in connection with the great mining interest of the British empire—we should be omitting a bounden duty were we not to afford more than a passing notice of this meeting; but, having been promised, through the courtesy of the directors, a copy of the document, we therefore postpone our remarks until we obtain it, when we shall furnish an analysis of the operations carried on in this vast deposit of mineral wealth.

BLASTING BY GALVANISM.—A very satisfactory application of this powerful agent has been made at the Rathmore tunnel, near Cork. Under the able superintendence of Messrs. McHenry and Glassford, upwards of 30 tons of rock were completely detached from the face, many blocks of half a ton weight being thrown 10 to 12 yards distance.

HEIGNSTON DOWN CONSOLS MINING COMPANY.

The two-monthly general meeting of adventurers was held at the offices, Threadneedle-street, on Tuesday, the 8th inst.

JAMES ASHWELL, Esq., in the chair.

The minutes of the last general meeting having been read and confirmed, the cost-book and bankers' pass book, showing balance of 207. 13s. 3d. in favour of mine, as also an estimate of assets and liabilities, the former amounting to 2855. 0s. 3d., and the latter amounting to 11947. 9s. 4d., were laid before the meeting.—The March cost-sheet of the mine, with the merchants' bills, were exhibited and passed.—Mr. J. H. Hitchens's report of the 7th inst. was then read, and a call of 5s. per share made.—It was resolved, that the secretary address a letter to Mr. S. Kerick, Charlestown, in reply to his letter to Mr. J. H. Hitchens, respecting the error he states to have committed in making the tender of 477. 17s. 6d. per ton, for 7 tons 6 cwt. of tin, offering to release him from the same, provided he will take the tin at the next highest tender of 377. 15s. per ton.—In future all tenders for tin or other ores are to be forwarded to the secretary—a sample having previously been sent to the different smelting-houses by the superintendent at the mine.—The following is an abridgment of the report which was presented to the meeting:—

Tavistock, May 7.—But little will be required to be said in reference to the progress and prospects of this concern, as comparatively little has been accomplished towards its development since the last meeting. Bailey's engine-shaft is not in effective course of sinking; the men having been engaged for a month past in cutting in, putting in penthouse, and in other necessary works preparatory thereto; a bargain has been taken to complete the next 10 fms. lift for the sum of 1400l., the takers engaging to pay the cost and charges of materials incident thereto. The lode at the deepest point reached is 6 ft. wide, with a declination to the north of about 24 ft. in a fms.; it contains but little ore; at the same time it is gratifying to state that it shows strong indications of copper ore, being composed of very conglutinated ferruginous quartz, intermixed in places with black oxide of copper, which, in places, by means of its precipitate, a strong tincture of most of the lode when brought to surface; this shaft is now down below the 35 ft. level about 3 fms., and will be prosecuted with the energy its importance demands.

The 35 ft. level, east of this shaft, is being driven with a fully efficient force of six men, and is advanced about 5 fms.; in the present end the lode is 5 ft. wide, composed of promising gossan, carrying in places, as in the shaft, the black oxide of copper, which produces an equally strong precipitate. In the box of specimens forwarded, there will be found some of the produce of this lode, which, it must be admitted, is to be considered, as far as possible, without being actually in course of ore. With evidence before you, and in connection with the cross-course further east, it is unnecessary to repeat the sanguine anticipations frequently expressed, that this eastern part of the mine will produce rich and lasting courses of ore. There is also a level 30 fms. from surface, driving west of Bailey's engine-shaft, by six men, in which, for 15 fms., good paying tribute ground for tin has been opened. The lode in the end at present is unproductive, although large, 5 ft. wide, and composed of a good deal of ferruginous quartz, but of more compactness, and consequently, admitting of much less satisfactory prospect. In consequence of the falling off of the water for dressing the tinstuff, it is the intention of the company to confine its operations for the present to the pursuit of copper in a direction eastward; this and every other western point of operation, with a view to tin, will be suspended, as well as the sinking of the westernmost shaft, upon completion of the present bargain, which a few more stems will accomplish. The sinking of Hitchens's shaft, on the south lode in the granite east, is progressing satisfactorily; its present depth is full 3 fms. from surface, and the lode is about 3 ft. wide, with a declination of about 1 ft. in a fms., producing in places good stones of copper ore (grey oxide), some of which have been assayed, and found to yield over 13 per cent. of copper. A stone of this ore will be found in the box of specimens forwarded. In reference to this lode, it is only necessary to observe that it is altogether as kindly a lode as can be expected at the shallow depth at which it has been explored. The ground from Bailey's engine-shaft to this point, with that beyond the cross-course to the end, will undoubtedly prove a very lastingly productive mine, chiefly for copper, which opinion is entertained by all those most conversant with the great merits of this locality. It is to be regretted the tin returns should not have been realised, which is to be attributed to the unexpected scarcity of water, without which it was impossible to carry out the various processes and manipulations of the dressing department. The dressing floors are now tolerably complete, and as soon as a sufficiency of dressing water can be obtained, operations will be resumed for bringing about the stuff, which will yield some good parcels of tin ore. There have been sold 7 tons 6 cwt. of tin; but through a mistake in the tender (letters explanatory of which are enclosed), the purchase has not been completed. The matter, however, is now left in the hands of the committee, who will deal with it accordingly.

KINGSETT AND BEDFORD MINING COMPANY.

The two-monthly meeting of shareholders was held at the Globe Inn, Exeter on Monday, the 7th inst.—Capt. W. FULFORD, R.A., in the chair.—The pursuer's accounts, showing balance of 177. 16s. 3d. in favour of the company, having been passed, a call of 5s. per share was made.—The CHAIRMAN stated, that arrangements were making for the payment of the 4000l., which the finance committee had agreed should be paid to the lessees.

The following report, from Capt. John Spargo, was read to the meeting:—

May 5.—This being our regular setting day, and within a day or two of the meeting, we thought proper to cut into the lodes so far as we have risen on the Bedford rise, as well as take down the lode as far as able in the end driving north. I am most happy to inform you that the lode in the Bedford rise is much improved since I, with Capt. James, last saw it; in fact, it is now a good lode for lead; therefore, I need not tell you that we are opening good slopes, or tribute ground, here. The eastern lode, going north, is just as when we last saw it, producing some excellent stones of lead; the spar is getting more and more, as there is every prospect of a great improvement in the tin returns further, and beg again to remind you of the propriety of rising here, as it will be beneficial for future operations. First, it will be opening a communication from the adit to the old workings; secondly, it will be proving the ground as we rise up; thirdly, it will be saving a great deal of cost in getting away deads, &c.; fourthly, it will ultimately serve for a shaft to throw in rods to sink under the adit, as well as enable us to stop the bottom lode. In fact, I consider it to be just the position for one of our main shafts under the adit, both as regards dressing-floors, and the right part for wheels, &c., as the matter is most convenient here. The copper lode looks well; it is increased in its bearing about 10 feet further than when we commenced driving; it is now about 50 ft. wide, composed of spar, muddle, and spots of copper. It carries a small fissure about 1 in. wide near the foot wall. It is large, but the most favourable part is about 24 ft. wide, with a great deal of water proceeding from the above fissure or crevice. We shall see more of this as we drive on. As regards the new lead lode we used to sink a few feet deeper on it, as well as the lode, and south cross-cut further north, so as to take a proper map, with each of the mine, lode, &c., as we cannot as yet state its underlay as it should be, so as to find out its intersection, &c. However, this we will prepare against the next meeting. In driving on the copper lode we shall intersect both, but to what point we cannot say as yet, until we take the underlay and bearing of both lodes. I believe my last report mentioned something respecting the large lode, and my expectations of copper at the junction, which I need not again repeat.

NORTH WHEEL FRIENDSHIP MINING COMPANY.

A general meeting of shareholders was held at the office, Tavistock, on Friday, the 27th April.—JOHN RUNDLE, Esq., in the chair.—The accounts for Jan., Feb., and March were examined and passed, showing—Balance from last account, 2344. 14s. 11d.; January cost, 1017. 6s. 1d.; Feb., 1007. 14s. 7d.; March, 207. 13s. 11d.—£ 643. 19s. 10d.—By 3d call of 10s., 5122l.; leaving balance due from adventurers, 1817. 19s. 6d.—A call of 10s. per share was made.

The following report was read to the meeting:—

Since the last meeting the engine-wheel has been erected, and was completed about the latter end of February last, and we have since sunk the engine-shaft between 8 and 9 fms. through a very large and kindly lode, composed of gossan, muddle, &c., and which has cleared out some of the present bottom—now about 18 fms. from the surface, and still are, shodding in Holditch estate, but have not found anything as yet worthy of much notice. The shodding to north of the Gibbet has not yet been resumed, in consequence of the continuance of the wet weather, but we hope to do so as soon as possible. At Wheal Delany we continued to work some of the old pitches to the end of March; but since then we have stopped them, in consequence of the levels being filled with work. There is now fully 1500. worth of lead ore ready to be drawn to surface. We hope to have a winn fully in the course of a week, when these ores will be hauled up. We have cleared out some of the old sink at the bottom of the 36 ft. level, and have sunk them about 9 feet, where we have broken some good lead work; but the water was found to be so much as to compel us to abandon these trials. We are now rising on the lode in the back of the 24 ft. level, where we have had some lead. This rise is now got up into a slide; but we expect again to have lead when we get through it; we recommend this rise to be continued.

WHEAL TRELAWNY MINING COMPANY.

A general meeting of shareholders was held at Webb's Hotel, Liskeard, on Tuesday, the 8th inst.—CHARLES CHIPPENDALE, Esq., in the chair.

The accounts for December, January, and February, being first duly examined, were allowed and passed, showing—By sale of lead ore, 3175. 6s. 5d.; by Wheal Trelawny adventurers, for use of engine and water to dress their ores, 607. 10s.; tribute ores forfeited and a fine, 87. 17s. 6d.—£ 2444. 12s. 10d.—Dec. cost, 1388. 12s. 5d.; January, 1393. 15s. 6d.; February, 1399. 12s. 4d.—£ 4180. 0s. 3d.—showing balance in favour of mine, 10262. 12s. 7d.—By dividend of 37. per share, 7800l.—leaving balance carried to credit of next account, 8327. 13s. 9d.—The following report, from Capt. H. Vivian and J. Kemp, was read to the meeting:—

May 8.—Phillips's shaft is sunk 7 fms. under the 72 ft. level; the ground is still good for sinking; the lode in the 72 ft. level, north of Phillips's shaft, is 3 ft. wide, worth 9s. per fm.; in the same level south the lode is 2 ft. wide, and worth 10s. per fm.; in the rise, in the back of this level north, the lode is 2 ft. wide, and worth 1s. per fathom. The lode in the 63 north is 4 ft. wide, and worth 18s. per fm.; all the slopes in the back of this level are looking very well. Trelawny's shaft is sunk 17 fms. under the 57 fathom level, and the ground continues very favourable for sinking; the lode in the 53 ft. level, north of Trelawny's shaft, is 2 ft. wide, and worth 12s. per fathom; all the slopes in this level are looking well. The slopes in the back of the 42 fathom level, north of Trelawny's shaft, are yielding a fair quantity of ore. The lode in the 40 fathom level, south of Smith's shaft, is 4 feet wide, and worth 5s. per fathom; in the same level north the lode is 2 feet wide, and worth 4s. per fathom. The lode in the 30 fathom level, north of Smith's shaft, is small at present, but we hope to have a change here soon, as the ground is more favourable; the lode in the winn under this level south is 2 ft. wide, worth 6s. per fm.; this winn is sunk 9 fms. under the 30 ft. level. We have commenced driving two levels from Wheal Trelawny boundary—viz: the 45 and 55. In the 45 ft. level the lode is 1 ft. wide, and worth 37s. per fm. In the 55 ft. lode at present is small, but we expect an improvement here shortly, from the appearance of the lode gone down before it. In conclusion, we beg to say that, from our present prospects, we calculate a continuance of our late returns.

CRADDOCK MOOR.—At the two-monthly meeting, held at Liskeard, on the 26th of April, the accounts were presented, showing—Balance of last account 97. 10s. 11d.; call made at last meeting 527. 15s.—£ 625. 6s. 11d.—Labour cost for January and February, 237. 7s. 9d.; materials, 47. 13s. 7d.; leaving balance in favour of adventurers, 224. 4s. 7d. The accounts were passed, and a call of 5s. per share made. The following report was presented:—"Since our last meeting our operations have been confined to the driving north on the cross-course,

composed of spar, gossan, and spots of yellow ore. From its underlay and general character, I think it to be Dunstan's lode, in West Caradon. Its underlay there is about 3 ft. in a line, while Dunstan's lode is about vertical. These lodes in the 17 ft. level, in West Caradon, are about 21 or 22 ft. apart, so that the underlay of Dunstan's will leave its back several fms. south of Vian's, in this shallow level, in Craddock Moor. I would recommend to continue driving north on this cross-course, to cut Vian's and Gilpin's lodes—then we shall be better able to judge where to sink to advantage."

EAST WHEAL ROSE.—The following is the statement of accounts for Jan. and Feb.:—Balance of last account, 7777. 7s. 4d.; sale of lead ore, Jan. 5, 1897, 3s. 1d.; ditto, Jan. 19, 1897, 11s. 11d.; ditto, Jan. 27 (Oxman's), 3612. 4s. 4d.; ditto, Feb. 2, 1897, 2s. 3d.; ditto, Feb. 16, 1897, 16s. 5d.; ditto, Feb. 24 (Oxman's), 2892. 5s. 6d.; ditto, ditto (North Wheal Rose), 4461. 12s.; Cargill's adventures, 1897, 17s. 6d.; charges, agency, &c., 2601. 14s. 10d.; ditto, for our three-fourths of profit, Jan. and Feb., 513s. 3d.; part proceeds of lead ore sold on the 2d of March, raised in Feb., 5602. 12s. 6d.; 7s. 1d.—To Jan. costs, 1966. 13s. 7d.; surgeon and club, 311. 16s. 6d.; February costs, 2053. 14s. 2d.; surgeon and club, 321. 0s. 6d.; bills, 1680. 4s. 5d.; coal, 2502. 10s. 10d.; income tax, 1507. 10s. 6d.; Stannary Court dues, 167. 17s. 11d.—By dividend at 25s. per share, 32002. leaving balance in hand, 7278. 8s. 9d.

GONAMENA.—At the two-monthly meeting, held at Liskeard, on the 26th of April, the accounts were presented, showing:—Labour cost for January and February, 731. 6s. 1d.; materials, 41. 5s. 4d.—771. 5s. 3d.; balance of last account, 517. 19s. 7d.; leaving against adventures, 254. 5s. 10d. The accounts were passed, and a call of 10s. per share made. The following report was presented:—"Since the last meeting we have driven east on Taylor's lode about 1 fms. We have had a kindly lode part of this distance, and have saved a little ore from it; but the end is now poor, though not without ore. We have cut a lode in the 28 ft. cross-cut, about 1 ft. big, and containing ore when first cut. It appears to become smaller the further we drive on it, and the underlay is so great that we doubt whether it is a branch or the main lode, and are accordingly now driving north, again in search of more lode. West Caradon adventures have brought their 60 ft. cross-cut to within a short distance of our shaft, and it will be advisable as soon as possible to continue it on to Taylor's lode, to explore it 22 fms. deeper than it has yet been seen."

LEVANT.—The statement of accounts for Jan. and Feb. shows:—By balance last account, 6492. 19s. 10d.; copper ore sold, 1660. 10s. 9d.; carriage ditto, 1611. 18s. 8d.; tin ore sold, 4862. 18s. 3d.; carriage ditto, 141. 12s. 6d.; lead ore sold, 471. 13s. 7d.; bill twice charged, 182. 13s. 4d.—1451. 17s. 7d.—To January costs and sundries, 1375. 17s. 6d.; February ditto, 1342. 11s. 8d.; tributers' pay, 151. 17s. 6d.; doctor, club, purser's bill, &c., 502. 8s. 0d.; carriage of ores, 1157. 18s. 8d.; coals, 2171. 0s. 2d.; merchants' bills, 883. 8s.; stamping and dressing, 417. 11s. 5d.; lord's dues, 812. 13s. 4d.; samples, fees, weighing, &c., 302. 11s. 5d.; freight, carriage, &c., 152. 13s. 9d.; sundries, 164. 13s.—By dividends, 19204. leaving balance to next account, 11487. 13s. 2d.

SOUTH WHEAL FRANCES.—The following is a statement of accounts for February and March:—To labour cost, 1202. 10s. 5d.; merchants' bills, 887. 15s. 11d.—2090. 6s. 4d.—By copper and tin ore sold, February and March, 3602. 5s. 10d.; deduct for lord's dues, 240s. 3s.—3362. 2s. 10d.; showing profit of 1271. 16s. 6d.; add balance in favour of last account, 6912. 9s. 4d.—19573. 5s. 10d.—By dividend this day declared, of 10s. per share, 12407. leaving balance in bankers' hands of 7236. 5s. 10d.

SOUTHERN AND WESTERN MINING COMPANY OF IRELAND.—The directors of this company, having made four ineffectual attempts to collect a sufficient number of shareholders to form a legal general meeting, have forwarded a copy of the report which they intended to have submitted to the shareholders. The call made the 2d of July not having been responded to, the expenditure has been limited as much as possible; but some is still going on, from which, however, the company cannot derive any adequate benefit. The directors have been unable fully to test the Gurtivall Mine, or to agree for others, to which their attention has been directed as likely to prove beneficial, and though they are reluctant to coerce unwilling shareholders to pursue an object against their inclination, they are equally aware to impede or injure the company to extend the operations at originally contemplated, and who entertain confident hopes of ultimate success. In order to meet the views of both parties, they have consented to permit the transfer to the secretary, on behalf of the company, of all shares on which half the call (say, 3s. per share) is, or shall, be paid before the 21st May, as that sum they calculate will be required to discharge the existing liabilities, and provided such transfer shall be executed on or before the 1st June. Such shareholders as do not pay, or transfer, according to the above arrangements, will be considered as intending to continue shareholders, and must, of course, be prepared to pay the full call within the day, and to aid the directors in such further measures as may appear to them necessary to carry on the business of the company with the views originally intended and provided for by the charter and subscription contract.

WEST CARADON.—At the two-monthly meeting, held at Liskeard, on the 26th of April, the accounts were presented, showing:—Materials sold, 71. 11s. 6d.; ores sold in Feb., including carriage, 2297. 16s. 7d.; ditto March, 2853. 9s. 6d.; (less lord's dues, 3082. 16s. 10d.)—4850. 0s. 9d.—By purser's agents, and count-house expenses, 821. 6s. 2d.; engine-men and reporting engines, smith's work, and carpentry and sawing, 1761. 13s. 7d.; tribute and tutwork (exclusive of materials), 1648. 10s. 6d.; surface-work, tramming, landing, &c., 3391. 9s. 8d.; charges on ores, &c., 561. 7s. 6d.; Devon and Cornwall Bank charges, 87. 5s. 3d.; cartage, 241. 5s. 3d.; doctor and club, 47. 16s. 6d.; materials, 854. 17s. 6d.; sundries paid in labour cost, 171. 7s.; canal dues on ores, for 1848, 183s.; calls on 53 shares in East Wheal Agar Mine, 661. 5s.; property tax on profits, half-year, 301. 2s. 10d.; leaving balance, being profit, 7367. 10s. 5d.; add balance of last account, 11761. 12s. 3d.—21513. 2s. 7d.—By dividend of 2s. 10s. per share, leaves balance in hand, 12734. 2s. 7d.

WHEAL BENNY.—A general meeting of adventurers was held at the offices, King-street, Cheapside, on the 10th inst.—PETER DAVY, Esq., in the chair.—The purser's circular convening the meeting, and also his authority to the secretary (Mr. Crofts) to act for him in his absence, according to the rules of the Cost-book system, were read; the minutes of the committee of the 10th April were also confirmed.—The report from the agent (which will be found in another part of the Journal) on the state of the mine, dated the 9th inst., was read, which held out satisfactory prospects for the future. It was resolved, that six miners be employed in driving to the lode in the 30 ft. level, and four men on the cross-cut south; and a call of 30s. per share was made, of which 10s. per share was made payable in seven days, and 17s. 10s. in 28 days. It was also deemed desirable that the works of the mine should be inspected by a competent person, and Capt. Lean, of Holmbush, was requested to undertake that duty without delay.

WHEAL LOVELL.—A general meeting of shareholders was held, on the 27th of April, at Dingley's Hotel, Falmouth, when the accounts for the quarter were audited and passed, showing:—To balance last account, 1336. 17s. 5d.; cost for Dec., Jan., and Feb., 2087. 19s. 10d.; lord's dues, 517. 19s. 2d.—3941. 17s. 5d.—By tin sold since last account, 2599. 5s. 9d.; sundries, 151. 2s. 6d.—2614. 11s. 5d.; leaves balance against adventures, 812. 5s. 9d.

WHEAL MARY CONSOLE.—At the two-monthly meeting, held at Liskeard on the 27th of April, the accounts were presented, showing:—By purser's agents, and count-house expenses, 261. 6s. 8d.; engine-men and reporting engines, smith's work, and carpentry and sawing, 851. 18s. 3d.; tribute and tutwork (exclusive of materials), 590. 7s. 5d.; surface-work, tramming, landing, &c., 851. 10s. 9d.; charges on ores, 2212. 8s. 10d.; doctor and club, 121. 14s.; materials, 2891. 15s. 9d.; sundries paid in labour cost, 124. 7s. 6d.—1324. 9s. 2d.—Sale of materials, 391. 0s. 3d.; copper ore sold in Feb. and March (less 2591. 5s. taken credit for in last account), 322. 4s. 8d.—1298. 19s. 3d.—Deduct lord's dues, 971. 8s. 2d.; sundries, 1161. 11s. 1d.; add balance, being loss, 162. 18s. 1d.—1324. 9s. 2d.—Deduct 887. 7s. 7d. over from last account, leaves balance now against adventures, 741. 10s. 6d.—The accounts were adopted and the following report was presented:—"The sinking of the shaft under the 50 ft. level, suspended for the present, the men being temporarily removed to the south tin lode. The lode in the bottom of the shaft is large, but poor. The pitches in the bottom of the 50 continue to yield about the same quantity of ore as they have done for some time past; but the back pitches are becoming much poorer than they have been. The winze (mentioned in last report) sinking for ventilation, has been holed, and the men removed to drive the 30 ft. level west, to come under the over ground in the 25 ft. level. The lode in the present end is poor, but we expect, as soon as we get through the patch of soft ground, that it will be found more productive. The lode in the 50 east is 2 ft. wide, composed principally of quartz, with occasional stones of ore, showing promising indications. Since the last meeting we have intersected another branch in the 25 cross-cut south, but are not satisfied that we have intersected the main part of the Lampen lode. This lode was worked many years since to the depth of 36 fms., at a point 100 fms. west of said cross-cut, and was found very productive. The ground in the cross-cut is very wet, therefore we are persuaded the main part of the lode is not yet cut. There are also several branches in the adit to the north of the old workings of the Lampen lode, which confirms us in our belief that we have not reached the main lode. The 12 ft. level on the south tin lode has been driven 7 fms. east and 3 fms. west of the new shaft; the lode is about 12 in. wide, saving work, but rather coarse in quality. We attempted to sink the shaft on this lode 10 fms. deeper; but after sinking it about 3 fms. under the 12 ft. level, we were obliged to suspend it for the present, the lode being too wet, and the men removed to drive the back of the old workings on the back, which quickly let down the rain water into the shaft. We hope to resume the sinking of this shaft again as soon as the summer season is a little more advanced. There is an adit driven from the western valley about 100 fms. east on the course of this lode, leaving about 80 fms. to reach the present workings—which if driven, would be deeper than the old workings upwards of 40 fms. The men who were sinking the shaft are now employed clearing this adit, hoping it may drain the workings to the east, and perhaps the back of it may be found to be worth working for tin. At the north tin lode there are two men and two boys employed on tribute, at 12s. in 12 ft. level, in consequence of the stoppage of Wheal Slaters' engine, is now up to within 4 fms. of the 14 ft. level. Should it not rise above this we think it would be advisable to sink a new shaft, to ventilate the eastern ground, as the circulation of air is now cut off under the 14 ft. level. There is no doubt that this lode will be found productive of tin if explored at this level. At Tremorkin deep adit we have 12 men employed:—viz. four on tribute at 12s. 4d., four stopping for tin, and four rising in the back. Since the last meeting we have cleared an old shaft here to the depth of 19 fms., to an old tin bottom 27 fms. long, w. 14 ft. of water in it. To unwater these old workings we have risen from the back of the deep adit towards the said bottom 7 fms., leaving about 1 fm. more to rise to the lode. The lode in the rise is about 4 ft. wide, composed of gossan and pryan, with stones of tin and copper ore. The tin raised from this lode for March was 10 cwt. 3 qrs. April tin has not yet been sampled. We hope when the communication is made with the old workings to have a considerable increase of tin from this part of the mine."

HARRIS'S LIGHTNING CONDUCTORS.—In the House of Lords, last night, the Earl of Wilton moved for certain returns relating to her Majesty's ships fitted up with Sir W. Snow Harris's lightning conductors, and also of the number of ships struck by lightning during a certain period. The Earl of Minto having entered into explanations on the subject, after a few words from the Earl of St. Germans, the motion was understood to be agreed to.

STEAM COMMUNICATION WITH AUSTRALIA.—In the House of Commons, last night, in reply to Mr. Scott, Sir F. T. Baring stated, that the subject of steam communication with Australia was under the consideration of the Admiralty.

BLACKBURN, CLITHROE, AND NORTH-WESTERN.—This company have just adopted the novel plan of issuing a printed list of all their shareholders in arrears of calls, in accordance with a resolution of the last general meeting. It contains the names of 144 persons, who hold 4405 shares; the total amount of arrears being 43,531.

LONDON AND NORTH-WESTERN RAILWAY.—The directors of this company are, on some of their branches, laying down a single line of rails, with the electric telegraph, in order to economise expenditure. We understand the company will, by this wise proceeding, save about a quarter of a million sterling.

MIDLAND RAILWAY.—Mr. Ellis, M.P., has been elected chairman, and Mr. Samuel Beale deputy chairman of this company.

(From the Plymouth Journal.)

WHEAL TREMAYNE LEAD AND SILVER MINES is situated in the centre of Wheal Tre-lawny, and within its limits about 100 fms. of ground on the course of the Wheal Tre-lawny lode. This mine has been working three years—during which time very large returns of lead have been made, and upwards of 2000. profit divided by the adventurers; and there is every prospect of its continuing to pay dividends. The water charges are only 27. 10s. per month—power being supplied from the Wheal Tre-lawny engine for this sum. This mine is 55 fathoms deep; the lode in which this mine is being wrought, passes through Wheal Tre-lawny, Mary Ann, Treban, and the North Tre-lawny Mines, and is one of the finest lodes ever discovered in Cornwall or Devon; and may be truly said to stamp on this district the appellation "argenteiferous." There is every reason to believe, both from the nature of the country, the proximity to the granite range of Caradon, which lies about four miles to the north of this lode, the fact that large cross-courses have been met with in prosecuting the copper mines in the Caradon district, of which mines they appear to be the very life blood. Near them it is that the vast deposits of copper discovered in West and South Caradon have been found (of which more hereafter), and which cross-courses, as they enter the killas, experience prove forms lead lodes. Tracing the course of Tre-lawny lode, there is little reason to doubt that it is the great cross-course which passes through Wheal Gill Copper Mine. Mining in this district is in its infancy.

RICH TOR AND VITREY.—The shallow adit is driven 30 fathoms further east than the deep adit level, and is going into an untried piece of ground, which will give full 50 fms. of backs. In the slope above the end is a lode, which is being taken away at 10s. in 12 ft. tribute; the end is not under this slope by nearly 3 fms. The deep adit will be resumed for many months later; but a rise having been made for ventilation, this end will be resumed at the next setting day. In the shallow adit, which is 18 fms. above the deep adit level, the whole of the ground has been taken away at a tribute varying from 7s. to 12s. in the quarry, and the bottom part of the level was the best part. In Frickeax shaft, which is about 120 fms. to the west of the deep adit end, the 10 ft. level, under the deep adit, has been driven 7 feet, and the 10 fathom level west has been commenced; the lode in this level is producing saving work, but is not rich, nor has the last 2 fms. of the lode in sinking produced much tin; but there is, in the sump, a splice coming in, which will most probably change the lode.—North Lode. The cross-cut is progressing slowly, there being a hard bar of elvan in the end.—Old Vitrer Lode. Dunstan's shaft has been sunk 22 fms. from the surface, and 10 fms. under the adit. This shaft intersected the lode which underlies about 6 in. per fm., 2 fms. under the adit, and has averaged from 12s. to 15s. per fathom gradually improving in depth, and in the bottom of the shaft it is considerably the best lode we have yet seen. A plat has been cut for the purpose of resuming the sinking of this shaft. A level has been driven east about 5 fms.; the lode has passed through a cross-course, and was, near that cross-course, worth 10s. to 6s. per fm., but is greatly improving as it gets off its influence, and this end is now worth full 10s. per fathom. The level west of this shaft has been driven 3 fms., and is now worth 30s. per fathom. The ground between these levels can be driven well at from 45s. to 50s. per fathom and will stand without timber.

ASHBURN.—The mines in this vicinity are proceeding satisfactorily. A fine lode of tin still exists at Coombe. It is expected the Holme Park will shortly go on. There is also a past company going to try experiments in the manufacture of this article here.

WHEAL FRANCO.—In the 32 ft. level, east from Burnell's shaft, there is a tolerably good lode. The lode in the 47 ft. level is producing ore, but is not rich. In the 62 ft. level east there is a kindly lode, which is improving. In the 62 west end is a slide, or cross-course, which is encouraging. At the general meeting, on the 30th, there will be funds sufficient to pay 12. per share, and leave upwards of 4000. in the purser's hands.

EAST CROWLAND.—The Rix Hill lode, which has not, for the last fortnight, looked quite so well as heretofore, has, within the last week, considerably improved.

THE VITREY LADY MINE has, we learn, been again set to work.

PLYMOUTH WHEAL YEOLEND.—The north lode has been let, to sink the shaft at 10s. tribute. On the south lode the western part of the stopes is worth about 6s. per fm., and the eastern part 10s.; whilst the lode in the shaft is worth 15s. per fm.

ASHBURN.—The extensive slate quarries at Rices are going on briskly. From the superior quality of the slate, which is now taken from a depth of near 300 feet in the quarry, it is well adapted for Exeter, London, and other towns. This undertaking affords employment to a number of men, principally from the Welsh quarries. The tunnel has been recently improved, under the superintendence of Mr. G. Shepherd, C.E., of Plymouth. It is reported that the extensive granite quarries at Haytor have been taken by a company in London, and will be shortly worked. The excellent quality of the Haytor granite, some years since, attracted unusual notice in London, as well as in several other cities and towns in England. Its colour and durability is not to be excelled. The quarry is well adapted for railway work, and will be a great benefit to the country. It is reported that the extensive granite quarries at Haytor have been taken by a company in London, and will be shortly worked. The excellent quality of the Haytor granite, some years since, attracted unusual notice in London, as well as in several other cities and towns in England. Its colour and durability is not to be excelled. The quarry is well adapted for railway work, and will be a great benefit to the country. It is reported that the extensive granite quarries at Haytor have been taken by a company in London, and will be shortly worked. The excellent quality of the Haytor granite, some years since, attracted unusual notice in London, as well as in several other cities and towns in England. Its colour and durability is not to be excelled. The quarry is well adapted for railway work, and will be a great benefit to the country.

*** We received the following report by this morning's post:—

EXMOR WHEAL ELIZA.—The mining agents report.—Since our last, the counter lode, in the 24 ft. level, has been cut through, which is 3 ft. wide; it is composed of a beautiful gossan, spotted with rich copper ore. We hope to cut the north lode in five or six weeks; we are warranted to expect, it ore if not rich, and from the indications on the south lode, in the level above, it may be fairly presumed there will be a good course of ore.

DEATH OF CAPT. JAMES BRYANT.—It is with deep regret we have to announce the demise of this gentleman, the much respected manager of Wheal Tre-lawny Mine, near Liskeard. This unexpected event took place on Wednesday last, the 9th inst., after a few days' illness. He was much esteemed by his personal friends, as a sound practical miner, and his decease will be long and deeply regretted by all who had the pleasure of his acquaintance; whilst by his wife and family the bereavement will be most severely felt.

WHITWORTH COLLIERY COMPANY, DURHAM.—At the Court of Bankruptcy, yesterday, Captain John Christie, a steel merchant, of Trinity-square, South-west, and late of the Honourable East India Company's service, appeared to pass his last examination. The report of Mr. Pennell, the official assignee, includes the subjoined statement. The bankrupt commences his balance-sheet on the 2d of December, 1846, with a capital of £8021, and has subsequently taken off as losses 7017, and doubtful debts 2000, thus disposing entirely of his capital. His unsecured debts are now 17912. This liability also returns liabilities to the amount of £8,0902. This liability has been incurred as one of the partners of the Whitworth Park and the Trinder Colliery Companies, in the counties of Durham. The assets are, property, 3212; and doubtful debts, 2000. It appears that the bankrupt's partners in the Whitworth Colliery, consisted of eight in number, all of whom have either become bankrupt or absconded. The bankrupt passed his examination.

ACCIDENTS.

South Roaker.—On Tuesday, Capt. John Dunkin received some severe injuries on the head and body, in consequence of the ladder by which he was ascending giving way, and precipitating him to the depth of from 6 to 7 fms.

Dudley.—James Downing dreadfully fractured and dislocated his right wrist—pieces of the bones of which were compelled to be removed—by his arm being dragged by the connecting rod among the machinery of an engine at Bumble Hole Colliery, under the British Iron Company, which, it appears, the poor man was attending, during the night, for his brother, who is the regular engineman.

West Bromwich.—Michael Finnon and Thomas Horton met with their death while engaged in loading a ship in Messrs. Bottley and Tildesley's pit, at Bill Hay Colliery. Having gone a short distance into the workings for something they required, a large quantity of coal fell, and completely buried them. On the coal being removed, Finnon was found to be dead, and Horton so dreadfully injured that he died in an hour afterwards. There had been some rumour that the pit was not properly secured, but there did not seem any grounds for this assertion, as the bottles of the pit were represented to be steady experienced men.—*Birmingham Journal.*

Bilston.—As Thomas Hands, a bankman, was at work on the pit bank of Moseley Colliery, in the act of removing the tackling chains from a skip that had just been drawn up the pit to the horse close by, and as he was drawing the chains along the railroad, one of the hooks caught one of the rails, and whilst the deceased had his back to the pit, pulling the chain, the hook came off, and he fell backwards, and he fell backwards into the pit with the tackling chains in his hands. He was brought out quite dead.

Tipton.—As Joseph Wasdell, superintendent of the machinery at Lord Ward's furnace Dudley Port, was engaged in repairing one of the fly-wheels, it unexpectedly made a revolution, and he fell into the pit in which it works. He was quickly extricated, but the injuries he had received were of so shocking a nature, that he died almost immediately after being released.

Oldbury.—Mr. James Waterhouse, butty, was seriously injured by a fall of coal at Messrs. Finch and Whitehouse's Colliery. The coals fell upon his neck, and the poor man is suffering from paralysis in consequence, but hopes are entertained of his recovery.

George Saunders, whilst in the act of descending a shaft with a quantity of timber, at Messrs. Bale and Robbison's Colliery, owing, it is supposed, to the timber getting dislodged, the poor fellow, in endeavouring to slip out of the skip, and fell to the bottom of the shaft. He expired in a few hours afterwards, from injuries received.

Maseley.—Rees Rees, a miner in the employment of the Lyvri Iron Company, was buried under a great mass of earth, which fell from the top of the mine. There is only a faint hope of his recovery.

Wigan.—An explosion of fire-damp took place at the colliery of Messrs. Byrom, Taylor, and Byrom, on Wednesday, the 2d inst., by which two persons were seriously injured.

Little Linsley, Durham.—J. Speed, aged 15, was crushed to death between a tub and the props of the pit in the Harbour Colliery.

Rices.—A frightful accident occurred at one of Mr. Russell's pits to a respectable and pious lad, named Elijah Shearne, aged 16 years; he was in the act of ascending the pit on the carriage (on which was a tram of small coals), which, it is supposed, caught in the side of the pit, turning it upside down, when the tram and boy fell to the bottom. When picked up, he was extinct, and his body dreadfully mutilated. A poor fellow, named William Griffiths, while at work, a few days since, at Cwm Dws, accidentally fell between the machinery of the engine and the wall, and was crushed to death.

NEW PATENTS.

G. E. Donisthorpe and J. Whitehead, Leeds, manufacturers, for improvements in preparing, combing, and heckling fibrous matters.

S. Wilkes, Wednesday Heath, Wolverhampton, brass founder, for improvements in the manufacture of knobs, handles, and spindles for the same, for doors, and other purposes, and improvements in locks.

R. Sutcliffe, Idle, near Bradford, York, cotton spinner, for improvements in machinery for spinning cotton, silk, and other fibrous substances.

G. H. Dodge, Manchester, manufacturer, for certain improvements in machinery for spinning and doubling cotton yarn and other fibrous materials, and in machinery or apparatus for winding, reeling, baling, and spooling such substances when spun.

W. Newton, Chancery-lane, civil engineer, for improvements in the Jacquard machine. (Being a communication.)

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.
M. P. P. Bourjeard, Davis-street, surgeon, elastic pessary.
E. Simons, Birmingham, fastening for trousers straps, and other articles of dress.
W. and H. Hutchinson, Sheffield, dilator for syringes.—*Mechanics' Magazine.*

LATEST CURRENT PRICES OF METALS.

LONDON, MAY 11, 1849.

ENGLISH TON.	per ton.	FOREIGN TON.	per ton.
Bar, bolt, & square, London.	26 10	Do. ditto.	26 10
Nail rods.	7 5	Do. ditto.	7 5
Sheets (cables).	8 10	Do. ditto.	8 10
Bars, at Cardiff & Newport.	5 2	Do. ditto.	5 2
Refined metal, Wales.	4 0	Do. ditto.	4 0
Do. antirustic.	4 0	Do. ditto.	4 0
Fig. No. 1, Wales, cold-blast.	3 10	Do. ditto.	3 10
Do. do. hot-blast.	3 10	Do. ditto.	3 10
Do. No. 1, Clyde.	3 4	Do. ditto.	3 4
Blewitt's Patent Refined Iron for bars, rails, &c., free on board at Newport.	4 0	Do. ditto.	4 0
Do. do., for tin-plates, boiler plates, &c., ditto.	4 10	Do. ditto.	4 10
Strirling's Patent in Glasgow.	2 10 3 2	Do. ditto.	2 10 3 2
Toughened Pig in Wales.	3 10 4	Do. ditto.	3 10 4
Staffordshire bars, at the works.	7 10	Do. ditto.	7 10
Figs. in Staffordshire.	3 0 3 10	Do. ditto.	3 0 3 10
Chairs.	4 0	Do. ditto.	4 0
FOREIGN IRON.		Do. ditto.	
Swedish.	12 0	Do. ditto.	12 0
CCND.	17 0	Do. ditto.	17 0
PSI.	—	Do. ditto.	—
Gouffier.	12 10 13	Do. ditto.	12 10 13
Archangel.	—	Do. ditto.	—
FOREIGN STEEL.		Do. ditto.	
Swedish keg.	14 5	Do. ditto.	14 5
Ditto faggot.	15 0	Do. ditto.	15 0
Do. ditto.	15 0	Do. ditto.	15 0
Sheets, sheeting, & bolts, per ton.	0 10	Do. ditto.	0 10
Tough coil.	per ton 89 10	Do. ditto.	per ton 89 10

Turns.—a, 6 months, or 24 per cent. dis.; b, ditto; c, ditto; d, 6 months, or 3 per cent. dis.; e, 6 months, or 24 per cent. dis.; f, ditto; g, ditto; h, ditto; i, ditto; j, net cash; k, 6 months, or 3 p. c. dis.; l, net cash; m, 3 months, or 14 p. c. dis.; n, ditto, 12 dis.

* Cold-blast, free on board in Wales.
REMARKS.—The iron market generally continues in the same depressed state we noticed in our last, and a further reduction in prices have been submitted to. Scotch pig-iron has again receded, and sales have been made during the week at 44s. 6d. to 44s. 8d. for mixed No., cash, in 10 days, and No. 1 Gartsherrie, 45s. 6d. Spelter, dull of sale. In other metals no alteration.

LIVERPOOL, MAY 11.—Iron continues dull of sale, and a further decline to a small extent has to be reported. For common bars, 62. is now the highest obtainable rate; whilst for cargoes in Wales, the rates are nominal, with a wide range from 52. 10s. to 52. 7s. 6d.—Staffordshire iron of all descriptions can be bought on easier terms, although no settled reduction in prices can be added.—Scotch pig-iron continues to decline slowly, but incessantly; and there are sellers to-day for 44s. 6d. for mixed numbers in the Clyde.—Copper is steady and in fair demand.—Block tin is reduced 6d. per ton.—Tin plates are a shade lower, with a small demand.

GLASGOW, MAY 10.—The continuance of political disturbances on the continent has a very depressing effect on trade generally; and pig-iron, so much does it now depend on foreign demand, is particularly influenced by it. In consequence of time contracts now falling due, large quantities of iron are brought into the market; and, as there are but few buyers, the holders are obliged to submit to lower prices. In the course of yesterday fully 4000 tons of mixed Nos. were sold at 44s. To-day there was a sale at 43s. 6d. cash. Iron delivered in the Forth, 46s. cash.

THE SCOTCH IRON TRADE.

Sir, I read with interest the communication of the Committee of the Metal Brokers' Association, and also that of your correspondents, Messrs. Ferguson & Rhind, on the subject of the make and exports with the home consumption of iron in this locality, and consider that whatever difference may appear on the face of the statements sent forward, that much benefit will arise from the publicity thus given, and enable the consumer and manufacturer to form something like an estimate of the trade, as well as the capitalist, and those interested in other districts. It has been too long the complaint that, in the several mining districts, there has been a system of concealment—I will not say delusion, or misrepresentation; but I believe it is universally known and generally acknowledged that, with the exception of just so much as the knot of frontsmen think proper to make public at their quarterly meetings, the public are kept in the dark; while it is equally notorious, that directly they leave the meeting and return to their respective works, the clerks are directed to communicate with parties, and offer pigs or bars, as the case may be, under the regulated price as agreed upon. In addressing you on the subject, I am only desirous of recording my opinion, in common with others, of the usefulness and advantage of information of this nature, at the

SALE OF COBALT MINES AND SMALL WORKS, IN NORWAY.—The undersigned, Administrator of the Estate of the company carried on under the firm of "Modum Blue Colour Works," gives provisional Notice, that, according to the Order of the Court, held on the 16th of March, 1849, the MODUM BLUE COLOUR WORKS, situated in the bailiwick of BUSKERUD, Kingdom of NORWAY, with all the MINES, BUILDINGS, HOUSES, FOREST, SAW AND FLOUR MILLS, &c., appertaining to it, will be SOLD, BY PUBLIC SALE, in the latter part of the month of June. The subject of the sale is the mine and works have been principally given by the mining director of the bailiwick, who, under Royal sanction, has for many years directed the operation of the mines and pool works.

The time, when, and the place where, the public sale is to be held will be advertised by the auctioneers in due time.
The Administration of Eker, Modum, and Sigdahl, Møllenhoff, near Drammen, in Norway, the 20th March, 1849. G. P. RASCH.

Report of Lammer, Director of Mines at Modum Blue Colour Works:—

In giving a short report of Modum Blue Colour Works, I shall begin with the mines—
1. The district now worked since a number of years is nearly on the height of the Skuterud Firste, and runs from north to south. It comprises a length of about 1400 fathoms, and only both ends—viz.: the north and south sides, run under the grounds of other proprietors. The Grange Skuterud belongs to the works. This district is divided into four parts—viz.: 1. The South Mines—2. The Middle Mines—3. The North Mines. 4. The Heating Reiver (remaining portions). The mines belonging to the latter are the most northerly, and are situated on the Grange of Soutad. The working of the latter was discontinued in the month of March, 1843, as the ore was found not to be of sufficient quality to work them profitably. Of the South Mines the Magerud Schürfe, and some other schürfe, lie the most northerly, beyond the grounds of Skuterud, but they have not been worked these latter years, as they are looked upon as less yielding. On the other hand, the mines Nos. 1 and 4 have been worked considerably until the spring of 1848, when they were discontinued, not on account of the ore failing, but as it was considered that the ore gained from them did not amount to a sufficient quantity to justify the expense of the middle and northern mines. The southern mines have yielded a cheap, but poor, and perhaps not so good an ore; the richer ore was rather scarce there. At the southern mine, No. 1 is, at a depth of 13 fathoms, the Bondecke trench, provided with a railway of 850 feet. The working of the mine No. 4 is facilitated by the open trench Fortuna.

A different case is it with the two remaining parts—namely, the middle and northern mines. These mines are in the richest and most valuable part of the layers (of ore); they have yielded nearly all the rich ore which takes so prominent a part in the manufacture of the finer blue colour, and yield them still as abundant and good as heretofore. The working of the middle mine is considerably facilitated by the trench called Hoffung, and the Clara trench, lying 11 fathoms deeper, and the railways running through them to the extent of 3360 feet. The north mine is joined to the middle mines by a railway of 560 feet in length, by which the working of this former mine is much assisted, for which, in time, the trenches of the middle mines will become available; and a layer of ore presents itself here of great magnitude, which, to judge from present appearances, will continue to yield rich ore in considerable quantities. These additional works will enable one to gain the ore as cheap as at present for a long number of years, if one commences at the proper time with additional works, particularly trenches, for which the localities are particularly inviting, under the supposition that the layers continue to preserve their present richness in cobalt metals. To assume the contrary—namely, that the ore should become less so by continued working, or by working downward—there seems to be no sufficient reason; and it is against every experience I have had during my working the mines for the last eight years. Nothing indicates a cessation or decrease of the ore. In the deepest points ore as rich and valuable are found just at present as on the higher points. Besides, arguing from theoretical suppositions upon the formation of the layer of ore, every practical miner will also arrive at the result that there is metal enough for a great number of years to continue extensive mining operations. To prove my views, I give a tabular view of the yield of the middle, north, and south mines, from the years 1830-31 to 1847-48 (the year calculated from the seventh mining month to the end of the sixth, therefore during 13 mining or weekly months). In this table I have inserted the charges of the working of the mines—namely, such as are paid by that department (in which payment for materials, as gunpowder, iron, and steel, are not taken—these amount to 12 per cent. of the charges named), the number of men employed, and the price per barrel, malm and ore, according to the charges named:—

Year.	Rich Ore.	Ordinary Malm.	Ordinary Malm holding Cobalt.	Men Employed.	Charges.	One Barrel Ore or Malm Costs.
	Barrels.	Barrels.	Barrels.	No.	Sp. D.	Sp. D.
1830-31	106	5545	3536	454	32,079	3 59
1831-32	104	6137	4744	467	32,581	3 8
1832-33	80	4915	4959	408	30,414	3 7
1833-34	103	3044	5032	360	25,793	3 18
1834-35	156	2364	7198	444	29,179	2 78
1835-36	102	3304	9180	454	31,816	2 39
1836-37	123	4035	10456	510	35,112	2 37
1837-38	163	5077	13016	617	41,041	2 16
1838-39	219	7162	19067	840	54,814	2 8
1839-40	197	4816	17320	821	52,807	2 44
1840-41	137	4299	21388	867	57,062	2 30
1841-42	194	3822	22901	786	53,769	1 115
1842-43	145	4346	26103	665	47,364	1 72
1843-44	145	4358	25471	636	46,997	1 68
1844-45	153	3781	23552	629	45,542	1 58
1845-46	166	3423	22274	610	41,955	1 74
1846-47	157	4082	23548	591	46,851	1 66
1847-48	280	3775	21242	536	38,622	1 63

The mines are provided with the necessary buildings; most of them are good, and well kept in repair. There is a considerable stock of ore now lying at the mines. The quantity cannot be exactly given, as the working continues. On the 24th March, it consisted of 16 barrels rich ore, 104 barrels ordinary ore, 7230 barrels copper-holding ore, and 21,316 barrels of malm, an ordinary kind of ore which is mentioned in the above tables, but may well be taken at a value of 60 sks., or 4 s. 4 d. per barrel. This considerable stock of ore permits an immediate continuation with the working of the crushing or stamping mill, and the easy access to most of the mines the bringing up of fresh ore. The stock will be increased instead of lessened till the time of sale. The work possesses, besides, several schürfe in the parish of Modum, and particularly at Snarum.

2. The Pool Water, or Stamping and Crushing Works. The principal stamping works lie near the Hoffung, where the water of the River Sima, and the considerable fall, give an excellent and very extensive mechanical power. There are here two buildings for stamping works: the one containing 16, and the other 36 stamps, which have worked in one year 27,000 barrels ore. The stamping works are provided with the necessary works for damming up the water. The work containing 16 stamps is about 10 years old, in excellent order; of the other some part is new, the other old, but still very good, and available for many years to come. Besides these stamping works, four others are driven by a rivulet of the River Snarum, one of which contains six stamps, and three nine stamps each, with the necessary fittings attached. All these are in excellent condition, but can only be worked during spring, summer, and autumn, when the rivulet and three reservoirs formed by damming give sufficient water power.

3. The melting-house is situated opposite to the stamping works at the Hoffung, on the side of the River Sima. It is only necessary to consider the large production of blue colours manufactured by the works to be convinced that everything necessary for a large production is provided. Even in the latter time this establishment has been augmented by two shaft furnaces with blowing machine (an iron cylinder), and steam-blower, to produce cobalt oxide. There are the necessary calcining stoves, glass stoves, colour-crushing mills, stamping works, drying room, and coopers' workshops; in short, everything necessary for the manufacture of colours. The following tables show that the production has nearly remained the same:—

Year.	Blue Colours (Smalts).—Centners.										Zaffres. Centners.			Oxide.—lbs.		
	5 F.	4 F.	3 F.	2 F.	F.	M.	O.	F.B.	M.B.	2 F.	2 F.	Calced Metal.	Col.	Red.	Black.	Grey.
1830-31	856	125								100						
1831-32	751	2238	1							7						
1832-33	941	589	3	66	3					864						
1833-34	136	1281	212	253						798						
1834-35	265	746	38	247	1	33	267	186	783							
1835-36	288	1184	129	73	32	312	345	1199		60						
1836-37	610	379	107			70	147	8	1231							
1837-38	10	622	528	187					1412							
1838-39	893	548	135	59		133	460	483	1404							
1839-40	596	1045		253	117				1690							
1840-41	950	70		245		63	721	1510								
1841-42	1863	532	2						795							
1842-43	958	936	27	390			199	1158	3090							
1843-44	127	1068		103	360		79	921	3900							
1844-45	69	659	614	3	39		234	878	1290	125						
1845-46	48	1248	237						1080							
1846-47	10	654	563			66	37	990	10	12						
1847-48	26	1018	319			91	112	166								

The stocks in the melting department will also be considerable. I merely name the ones 1839-40. Slicer of rich ore. There will be sufficient material to begin with the manufacture of any kind of colour one chooses, and to continue without interruption till fresh supplies are obtained from the mines.

The net profits derived from the books by the book-keeper, Mr. Deck, have been as follows, and will but show what considerable gain the works have hitherto given:—

Year.	Specie dollars.	Exchange.	Specie dollars.
	Silver.	Paper.	Paper.
1830-31	17,221		23,248
1831-32	19,521		27,067
1832-33	29,062		40,106
1833-34	30,007		38,324
1834-35	33,615		39,330
1835-36	42,010		47,051
1836-37	37,592		42,103
1837-38	37,533		43,244
1838-39			40,940
1839-40			38,337
1840-41			11,185
1841-42			12,422
1842-43			31,598
1843-44			24,749
1844-45			15,578
1845-46			19,675
1846-47			4,538

The paper specie is at present par with silver, about 4 s. specie dollars, equal to £1 sterling. So far regarding the proper mining department, but considerable other properties belong to the work. The grounds of the lands are charged at an annual tax of 45 Sp. 2 mark 15 sk., and comprise Fossum, Skuterud, and Askasly. They contain not only excellent and well maintained buildings for the officers, but houses for the labourers, and school-houses. Amongst the properties of the works should be named the Maalen Rinne (a canal for transporting masts and timber), through which passes all the timber from the River Sima, then corn mills, and two saw mills.

These canals give at an average a revenue of about 1100 Sp. yearly. On the Govern-

ment calculation for fire insurance, at the end of 1846, the whole of the buildings belonging to Modum works were valued at 149,110 Sp. This sum will give the best and clearest idea of the extent of the works.

The buildings at the mines (mining-houses), miners' rooms, smiths' shops, coal-sheds, were valued at Sp. 5,560
Stamping works at Skuterud rivulet 10,340
Ditto at Hoffung 10,660
The smelting-house, colour-mills, calcining-house 75,270

Other buildings of the work, corn-mills, &c. Sp. 102,230
Total 46,850

The stock of materials and the inventory are of considerable value, but it cannot be given with any certainty, as it changes from day to day.

Of the taxes on the work, the poor-rates only are worth mentioning. These are considerable, but there is every reason to assume they have reached the highest point. The expenses are 1000 Sp. per annum. These can be covered by the revenues arising from the coal for carrying timber and the flour mills.

The situation of the works is very favourable: it commands the waters of the Sigdal, and is protected by the extensive woods of that valley against want of burning material. The Sima river offers an easy access to the considerable quantities of firewood required by the works, and places at its disposal, by the high waterfall at Hoffung during all the year, the extensive water power required for the machinery of the crushing mills, the melting-houses, corn and saw mills. The mines are about one Norwegian mile distant from the town, and joined to it by a capital road, on which the ore can be transported as well during summer as in winter. The works, situated only three Norwegian miles from the port of Drammen, have an easy export for its produce, nor a difficult one for its supplies of grain and materials.

Inquiries may be addressed to Goodhall and Reeves, London.

NOTICES TO CORRESPONDENTS.

"* We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith."

"G. B. C." (Lampeter).—Green iron earth, or hypochlorite, is a very rare mineral, which occurs in reniform, botryoidal, and globular masses; its structure is impalpable, colour ashen green, passing into black and yellow, lustre dull, with a yellow-greyish streak, and brittle; becomes brown and black before the blow-pipe, but does not melt, nor is soluble in nitric acid; it is found at Sayn, in Germany, and Schneeberg, in Saxony. According to Schuler, it contains oxide of bismuth, 13.03; silica, 80.24; alumina, 14.63; oxide of iron, 10.54; phosphoric acid, with traces of manganese, 9.62.

"An Enquirer" (City).—The weight of iron used in Southwark-bridge is 4385 tons; the span of the centre arch is 240 feet, that of the side arches 210 feet each.

"A Reader" (North Britain) inquires—"What will be the power of a water-pressure engine that is required to lift 131 cubic feet of water per minute, a height of 360 feet, the engine working at 4 strokes per minute, and length of stroke 10 feet—that is, the piston moving at the rate of 90 feet per minute, the diameter of cylinder 30 in., and the height of the fall, or pressure, 96 feet 7 in.—and what quantity of water will be required for that purpose?"—Eighty-nine horse-power would probably be required; the quantity of water must be determined by some one practically conversant with hydraulics. We give publicity to our correspondent's letter, in hopes that it may attract the notice of some one who will be able to give the information requested.

"J. L." (West Nethard).—We are not aware how many shares are taken up in the mine, and should advise you to apply for information to some respectable share broker. We do not know who the parties are connected with the other mining company. The accounts received from those regions have been lately so variable and contradictory, that due caution should be required previous to banking in any speculation where there is a probability of heavy liabilities being incurred.

"G. T." (Sunderland).—The duty on pig-iron imported into Norway is 36 skillings per Skippund of 360 lbs. avoirdupois. The use of coal as fuel for domestic purposes is, in the capital and the fishing districts, becoming everyday of more importance; there is no doubt, in a few years, that the west of Norway will become large consumers.

"Smelter" (Swansea).—Messrs. Godefray, Robinson, and Belts are the proprietors of the Elbe Copper Works. At present this establishment is suspended, on account of the Danish blockade. No English ores have ever been smelted there; hitherto they have received their supplies from South America.

"An Engineer" (Bristol).—According to Mr. Craddock, to produce 95-horse power gross with steam, at 115 lbs. per square inch, it would require 1736 lbs. of steam per hour, or 217 lbs. of coal; without expansion, at 18 lbs. per square inch, it would require 4690 lbs. of steam per hour, or 594 lbs. of coal; without condensation or expansion, at 40 lbs. per square inch, it requires 3270 lbs. of steam per hour, or 690 lbs. of coal. The atmosphere is included in all the above pressures.

"An Asturian" (City).—The copper mine at Sama, has been abandoned for some years. A small blast-furnace was erected there. No trace of it remains, though specimens of the regulus produced are still picked up. The old workings lay about two miles from the road constructed by the late Mr. Aguado, to convey his coals from Sama to Gijón. We do not know whether they have been recently surveyed; but should think that, if they had been of any value, the Asturian, or some of the other companies in the provinces, would have taken them up.

"E. A." (Coventry).—Col. Colquhoun, of the Royal Artillery, was one of the first commissioners sent out to Mexico to inspect and report on the silver mines here.

L. Mauré (Rouen).—The tinning of brass pins is commonly thus performed. A vessel is filled by layers of brass pins and plates of tin—one of these plates being uppermost and undermost. The vessel has then a solution of cream of tartar poured in the acid dissolves the tin, which the zinc of the brass precipitates on them in a reguline state, by which, after five hours' boiling, they are uniformly tinned.

"D. F." (Cornhill).—We do not know exactly the quantity of gold pins exported from London to New York since last year, upwards of 1,000,000 were made in that city—800 lbs. weight of gold being used in their manufacture.

"H. F." (Christiana).—The ores of cobalt are torrefied in Saxony in furnaces; the arsenical vapours, attaching themselves to the sides, yield the arsenic of commerce. When the oxide of cobalt is cleaned of arsenic, it is known by the name of "aure." The zaffre of commerce is mixed with three-fourths of sand. This oxide, fused with three parts of sand, and one of potash, forms a blue glass, which, when powdered, sifted, &c., forms snuff. The most simple way of obtaining cobalt in its metallic state is to reduce it from snuff, by fusing one part of snuff with six of soda.

"G. M. F." (Truro).—Gieschite is an exceedingly rare mineral, it being hitherto only found in one locality—Akkullarsdalsk, in Greenland, imbedded in compact felspar; it is a combination of potash, silica, and alumina, with admixtures of magnesia and the oxides of iron and manganese.

"S. M. P." (Brighton).—The oldest copper mine at present working is said to be that of Fahlun, in the province of Dalararna, in Sweden. Tradition states that it was worked about 1000 years B.C. Records exist proving that it was a flourishing mine in the ninth and tenth centuries. The silver mines at Sala, in the same country, are only partially worked; for many years they have scarcely paid their working charges.

"E. M. L." (Ougrée) shall be attended to in our next Journal.

"T. R." (Swansea).—On the continent great quantities of copper ore are calcined in the open air, wood being the fuel in general used. From 30 to 120 tons are placed in a square or round open kiln, with 2 or 3 fms. of dry wood, and covered with snuff; when this is kindled, it burns from a fortnight to three weeks; it is afterwards mixed with charcoal, and reduced in blast-furnaces. The ore is scarcely ever ground, but merely reduced to the state of small stuff. Very little care or attention is required in this process, after the ore is piled and lit; in general one man attends to several hundred tons.

Received—W. Heath, C.E.—"R. H. T." (Lawton).—"A Miner" (Newton Stewart).—"An Engineer of the Next Generation."

"* It is particularly requested that all communications may be addressed—

TO THE EDITOR,
Mining Journal Office,
25, FLEET STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, MAY 12, 1849.

When the few colonial remarks of the 22d of April passed out of our hands, we had not read the interesting debate on Mr. Scott's motion to inquire into the administration of the colonies. Of course, the motion was practically negatived; for all parties, including the mover himself, saw that they could do nothing but stare at each other, when they came to deliberate on colonial affairs and to surmount colonial difficulties. As well grant a committee to inquire into the course of the equinoxes, or any other subject utterly beyond the reach, and impervious to the regulation, of a Parliamentary committee; as to grant one for the revision or the elucidation of the policy which it is expedient to pursue for the right government of races of men so various and so peculiar as those which people the lands forming the colonial boundaries of this great monarchy. One point in the course of the discussion was brought out with remarkable distinctiveness and effect by the able Under Secretary, who led for the Government on the occasion. It is known to all the world that the Parliament of Great Britain legislates for the colonies; but it is not so extensively remembered that particular enactments, which are distasteful, or constructively injurious to those for whose benefit they were intended, are straightway, and without reservation laid as a matter of conscience at the door of the Colonial Office; and that department has to bear the hoarded resentment, the accumulated censure, of the colonies, for measures to which a united Parliament, and the concurring powers of the Legislature, have deliberately given form, substance, and authority. This point was brought most distinctly and successfully to the notice of the House of Commons; and we have reason to hope that henceforth such complaints as needs must be got up, or such as have any actual foundation, will take just that direction, and light upon those shoulders to which the commonest principles of justice

ought to conduct them. We have said before, that we can scarcely believe a tenth part of the murmurs with which the air of Parliament is rife have any colonial origin, or can exhibit the honours of a colonial pedigree. Still, if we err in that opinion, we are confident we do not in this—that our mining friends, sprinkled not very sparingly up and down the most promising of the magnificent districts in question, will make a just discrimination between the supreme irresponsible powers of the Imperial Parliament, and the merely administrative duties of the Colonial Minister.

The letter of a correspondent, which will be found in another column, touching on the Cost-book System, and the accounts made up at the two-monthly meetings of adventurers, is deserving of attention beyond that of the mere note we have appended thereto, as, however strange it may appear, the very complaint made is calculated to elicit the like from other parties who, with good reason, have to complain of a different course being pursued. Instead of an extreme caution being observed in the instance before us on the part of the pursuer to have moneys in hand to meet current outgoings, and taking good care to have a surplus in hand, it will be found in other cases which, unfortunately, are too numerous to individualise, the error, and, as we have reason to believe, too frequently wilful, is committed of excluding or omitting claims, and thus misleading the adventurers as to the real state of the accounts, dividends being declared on the HUDSONIAN principle, while, in truth, calls should have been made.

The particular case to which our attention is directed is simple in itself, and to which we invite attention, so that those who adventure in mines may take a lesson. We have already observed, that it is too frequent merchants' bills and liabilities are kept back, until perchance some hundreds, nay, even thousands of pounds, may be owing; and yet shares change hands—the uninitiated, or those placing confidence and unsuspecting, purchasing shares, under the impression that all back costs are paid up to the last meeting. We may here refer to the case of RICKETTS and another v. BENNETT and another, reported in the MINING JOURNAL, June 12-19, 1847, where dividends were declared and divided at the very time moneys were borrowed from the bankers to the amount of 36684, which were applied in payment thereof, and the expenses attendant on working the mine. This in itself is sufficiently illustrative of the importance to be attached to the due observance of the Cost-book System, which, we are sorry to say, but few comprehend, and of those few too many misrepresent and so mystify as to deceive the honest and well-intentioned adventurer. We must, however, needs confine ourselves to the letter of our correspondent, who complains; and as we think with much justice, and on fair grounds, that at the meeting lately held of the adventurers in Spearne Consols, a balance of 3531. 13s. 10d. only was shown in favour, whilst such should have been 4351. The difference, we admit, is comparatively insignificant, but the principle is the same, and it is on that we are induced to make any remark. The mine is divided into 128 shares, and our correspondent, dividing the number of shares into the surplus, naturally arrives at the conclusion that the result will warrant a dividend of 31. per share, or 3844, and then leave a balance of 501. in the pursuer's hands.

This may be all very correct; but we think the sum of 501. is far too small to carry on the mine for the ensuing two months. There is an old saying, of "eating the calf in the cow's belly," and, we think, our correspondent is rather disposed to do something of the sort; for although a 31. dividend might be declared to-day, we would ask, would not a call have been required on the morrow, or how were the costs to have been met for the current two months' expenditure? There is, however, a remark which, we think, the pursuer would do well to note—that of charging materials for the months of January and February cost, which should cover over a space, or period, of six months. On the other hand, let us see what is the ordinary course pursued by pursuers, and the errors fallen into.

A case presents itself to our notice at the moment, which may serve as an example, although we would hope that it does not apply to "One and All." A meeting of adventurers, having a pursuer in Cornwall, was held in London not many weeks since, when the cost-book and accounts were presented: a trifling error led to an inspection of the accounts; this was followed up by the appointment of a committee to investigate the same, the result of which was, that instead of there being a balance of some 200l. or 300l. against the adventurers, there was absolutely a sum of some such amount in their favour—the pursuer having, in his multifarious duties, happened to make a mistake. We can only say, in conclusion, that adventurers will do well to watch their pursuers closely; in this case the error is on the safe side, while we regret to say, it forms an exception to the general rule.

We had occasion, in a late Number, to advert to the anniversary dinner of the IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY; and it is with pleasure we now direct attention to the notice, which appears in our columns of to-day, of the election of additional pensioners on the 25th inst., when we trust that the vote given for the successful candidates will afford conclusive evidence of the additional support rendered by the trade and those associated therewith. When it is considered the number of iron-works, forges, found

PROSPECTS OF MINING INDUSTRY.

In the observations offered in our Journal the week before last, regarding the hopes which the settlement of their affairs by the Hungarians hold out to our mining and manufacturing interests, we touched generally upon one or two objects, to illustrate the nature of the new demand which may be expected. The rapid progress of the arms of the Hungarian Parliament induces us to specify more particularly the markets which will shortly become accessible to our traders.

It has been observed, with regard to copper, that refined qualities are those sought in Austria; for although Hungary abounds in copper ore, yet there is neither cheap fuel nor technical skill to refine cheaply. A critical correspondent, indeed, volunteered the presumption, that this assertion involved a slur upon the Austrian merchants, who come hither as to the cheapest market for refined metals, and export half-manufactured produce. Our remark was not intended to convey any slur of the kind, for experience has sufficiently shown, that in every country the interests of trade are safest in the merchants' hands; besides, it is to this very calculation of their knowing the advantage of buying cheaply, that we have to look for an extension of our trade on the present occasion.

The remark ventured applied to the Austrian Government, happily for the finest countries of Europe, now overthrown, and not likely to be able to enforce its antiquated financial notions on the rest of the world. The Government did not share the merchant's notion, that he ought to buy and sell where he could do so best, and accordingly imposed the following duties upon refined metals imported, and on half-manufactured, when exported:—Refined copper, 2l. per ton; copper wares, 78s.; iron bars, 12l.; iron wares, 24l.; lead, in sheets and pipes, 17l. per ton.

As we before stated, the Hungarians have, for many years, wished to throw off the intolerable yoke of these duties, which, far more than their inland position, cut them off from Europe and the civilised world at large. The Austrian Government made, indeed, a parade of appointing only men who had passed scientific examinations as directors of its mines; but the consuming population, in Hungary at least, thought it would be more meritorious to allow foreign wares to enter, than to bolster up artificial manufactures by such enormous protecting duties. The whole production of the empire was ridiculously small for a population of 36,000,000. The official returns give it as follows:—Copper, 2457 tons; iron, 132,469 tons; lead, 5902 tons; and the prices at which the official valuations are laid show the cost of producing even this small supply. Pig-iron costs the Government miners 7l.; rolled, 22l.; sheet, 44l. per ton.

The greater part of both the Austrian and Turkish empires being agricultural countries, their consumption is almost wholly of finished wares; hence they are valuable customers. The road by which access to the sea was easy for Hungary was, consequently, separated in the last century from that kingdom, and placed as the military frontier under martial law, under pretence of checking the incursions of the Turks. These incursions might have been more easily repressed than by military colonies, if the Austrians had properly kept up the trade with the Turks. Along the frontier of Hungary and Bavaria there are appointed stations, called "Rastellen," where it has long been the practice to hold fairs, and where the custom has been to purify cattle by driving them through the stream, which forms the boundary between the two countries. Unhappily, however, the trade between two agricultural countries could not be a large one. The Hungarians had no useful manufactures to give, nor were any to be got from the northern inhabitants of Turkey. Both possessed abundance of wool, grain, cattle, hides, hemp, and timber, and no one wanted his neighbour's superfluity. Had the import trade from England been free, large quantities of saddlery, cutlery, arms, farming implements, tin and zinc plates, copper wares, sheet and pipe-lead, would have found ready sale at these Turkish fairs, and have made the parties on both sides happy and friendly towards each other. The Hungarian frontier was, however, double locked by Austria. All goods imported had first to pay the Austrian tariff duties at Trieste, or France; and then, again, on passing into Hungary Proper, a duty of 3 per cent. was levied in the name of the King of Hungary. This last duty, ostensibly a moderate impost, became quite intolerable when laid on after the Austrian demand. As a necessary consequence, these thousand cheap wares which our manufacturers in Warwickshire and Staffordshire produce of such excellent quality, were excluded from these vast and rich tracts. We take upon ourselves the full responsibility of recommending an adventure of an assorted cargo of saddlery, cutlery, and lead and copper wares, to be tried as soon as the *Daily News* (the best informed source on Hungarian matters) shall announce that the Magyars have taken Fiume, for there will be an immediate demand, almost to any extent, for such articles, and the prohibitive duties will not only be immediately done away with, but there are regular facilities at Fiume on the Adriatic for bonding.

A M. Cyprian Robert, who devoted of late years considerable time and research to the state of these countries, was able to detect the coming struggle for emancipation, and hit upon a truly French mode of insuring the influence of his country in the new field about to open. His eye was caught by the fine military position of the inhospitable Balkan, on which he constantly sees 20,000 Frenchmen parading the tricolour, and sending down the inspiring tones of the *Marseillaise* to the many-coloured mass of nations on the plain.

When we visited the same parts, we planned a totally different kind of intervention. We fancied a few hundred smart commercial travellers transformed into supercargoes, carrying a formidable array of English manufactures down the navigable Save into the heart of Hungary, at its point of junction with Turkey, distributing the tools of industry and the means of economising time to the inhabitants of those rich countries, living at almost free quarters, until the time of sheep-shearing, rape threshing, and tobacco drying arrives, and coming back to a London winter with their vessels filled, at rates which must at least yield 100 per cent. on the capital of their employers. Such an expedition would do more to insure moderate duties and good treatment for our merchants, than all the diplomatic missions which for centuries have mystified and delayed what the instinct of human nature sees clearly and finds easy to accomplish.

The peculiar position of the Hungarian landowner, in being exempted from the evils of a land-tax, has already been pointed out in the *Mining Journal*. He is, consequently, only limited in the extent to which he can produce by his command of tools and his prospect of a market. Give him a market at the lowest conceivable price, and he will till the soil, not being exposed for so doing (like the German, the Frenchman, the Canadian, and the East Indian) to a fine for being industrious. Let him, therefore, have his med of English ploughs, harrows, threshing machines, saddlery, shears, sickles, and he will pay well for them in wool, wheat, maize, hemp, flax, tallow, and, above all, in magnificent tobacco, which, if our duties are too hard upon it, finds a ready sale at Marseilles and Gibraltar. This untaxed position of the cultivator of the soil is a mine of wealth for the trader, as it insures production, and, consequently, stocks of exchangeable goods.

It will be remembered by our readers, that the three great resources of England in time of need are the three countries which are exceptional, amongst all others, in having the land free (like monied capital) from the tax gatherer's gripe. The United States, Russia, and Hungary alone have no land-tax, and are the only places we find stocks of food in when we are starving. But it may not have been remarked that the price at which we import is fixed by the ability of those respective countries to take our manufactured goods. The course is, consequently, this. We begin with America when we wish to get grain; and as long as America takes wares in payment, Russia and Hungary must keep to American prices. But when America is overdone, and the orders for wares cease, so that bullion must go out, up goes the price, until it covers the high protecting duties of Austria and Russia. The starvation price (80s. to 100s.) begins when these countries are overdone, which, with their duties, soon takes place. From this hint, it will be easy to deduce the value of the 20,000,000 of consumers opened by a moderate tariff in Hungary to our manufacturing no less than to our consuming population, whose interests, whatever designing people may say to the contrary, always go hand in hand.

SALE OF THE LONDON AND BLACKWALL RAILWAY ENGINES.—At the Auction Mart, on Wednesday, Messrs. Pallen and Son submitted to auction the engines which have been employed on the Blackwall Railway to work the rope, and disposed of in consequence of the alteration in the motive power on that line. The first lot consisted of a pair of engines at the Minorities station, of 110-horse power each, but stated to be capable of greater power; they sold for 3330l. Another pair of similar make, and at the same station, fetched 3900l. and five boilers 299l. The engines at Blackwall, of 75-horse power each, and stated to have cost 7000l. per pair in construction, fetched for one pair 2250l. and the second pair 2200l. and the boilers 311l. All the lots were understood to be sold, and produced in the whole 11,710l.

It is said, that the engine manufactory of the North-Western Railway, at Crewe, turns out a new locomotive and tender every Monday morning.

MINING LAWS OF SPAIN—No. III.

CHAP. VI.—OF THE MINES BELONGING TO THE STATE.

ART. 32.—The following mines are reserved by the State:—the quick-silver mines of Almaden; the copper mines of Riotinto; the lead mines of Linares and Falset; the calamine mines of San Juan de Alcaraz, in which the State only has the direct dominion; the sulphur mines of Hellin and Benamaurel; those of graphite or plumbago, comprised in the judicial department of Marbella; the iron mines, which in Asturias and Navarre are appointed to furnish the necessary mineral to the national manufactories of arms and ammunition of Turbia, Ormaiztegui, and Eugui; the coal mines existing in Asturias, in the districts of Morcin and Riosa, registered by the director of the manufactory of Turbia, for the supply of fuel to the same. The extent of the pertenencias of the aforesaid mines shall remain as at present; those which may not have been expressly determined, shall be settled by the Government. No person shall be allowed to open pits, nor make researches within the circuit or demarcation of the mines of the State unless by order, and for account of the Government; neither shall grants be made of pertenencias of mines, nor of slag heaps. Minerals which it may not be the object of the Government to work are excepted; for such the pits are to be made at a distance of at least 600 varas from the workings and works of the State. The slags from the mines or factories of the State belong to the same, and shall not be reduced by individuals, although they may be beyond the limits of the mine, or the jurisdiction of the factory. The State shall not in future be allowed to engage in, nor to acquire, mines or slag heaps, unless the Government be authorised by a special law.

CHAP. VII.—OF THE TRIBUNALS WHO ARE TO TAKE COGNIZANCE OF MINING MATTERS.

ART. 33.—The provincial councils shall take cognizance, with appeal to the Crown:—1. Of the oppositions to denunciations of mines and slag heaps, and of reduction works that may have been abandoned, or have forfeited their grants, according to the provisions of Articles 24 and 31.—2. Of the business relating to mines, in which the State has a direct and immediate interest, and in such questions as may arise between the administration and the miners. For the examination and decision of these matters the best qualified mining engineer of the province shall assist as special adviser, and have a vote.

ART. 34. The Royal Council shall take cognizance in opposition (*en via contenciosa*):—1. Of the appeals which may be made against the grants of mines, pertenencias, &c., belonging to the Government.—2. Of such as may arise through resistance to the conditions which the Government might impose upon the grant.—3. Of such as might be established by the resolutions of the Ministry against those who put forward the said remedy.

ART. 35.—The ordinary tribunals shall take cognizance of all disputes between individuals, and of the crimes and defalcations committed in the mining dependencies.

ART. 36.—Of the causes which arise through fraud in the mineral products, the competent tribunals shall take cognizance of frauds against the public revenue.

ART. 37.—The tribunals shall not have the power in any case, except that of bankruptcy, to decree the suspension of the works of the mines or reduction establishment, nor to grant executions against the first, nor the effects necessary for its *aviso*, but they may be granted against the produce, whether in ballion or specie.

CHAP. VIII.—OF THE CORPS OF MINING ENGINEERS AND THEIR SCHOOLS.

ART. 38.—There shall be a corps of mining engineers charged with the direction of the workings of the mines of the State, and of the other obligations relating to mining, and which the regulations may determine.

ART. 39.—There shall be a school of mines for the instruction of the students in the corps of mining engineers. There shall also be practical schools in Almaden and in Asturias for engineers, masters and captains of mines.

TEMPORARY PROVISIONS.

1. Grants which have already been made shall remain as up to this time; nevertheless, if the grantees wish it, the dimensions of their pertenencias may be enlarged to the 300 varas in length by 200 in breadth, measured horizontally, as fixed by the 11th article of this law, provided always that there is free space for it in one or the other sense. The grantees shall continue in the enjoyment of all rights which they may have acquired, with respect to the laws and regulations hitherto in force.

2. The same is understood with respect to the mines of iron which may be for the common benefit, which shall not be denounceable, except in case of not being able to continue the working in any other manner than by underground operations.

3. After the promulgation of this law, there shall not be established works of reduction by means of high furnaces in which wood fuel is employed, nor Catalan furnaces, unless the Government gives its authority, after a report from the chief magistrates, who shall hear the authorities of the towns where they may have to make the charcoal, and the commissaries of the woods of the district.

4. The causes pending before the inspectors and the superior tribunal, or direction of mines, whose especial jurisdiction is suppressed by this law, shall be transferred, according to their state and nature, to the competent tribunals, with reference to this same law.

5. The Government shall publish, as soon as possible, the regulations necessary for the execution and explanation of this law, whose provisions shall, meanwhile, remain in suspense.

6. Lastly, an especial and protective law shall fix the duties upon mines and their products; and, in the interim, they shall continue as at present.

We, therefore, command all tribunals, justices, magistrates, governors, and other authorities, civil, military, and ecclesiastical, of whatever class and dignity, that they protect, and cause to be protected, fulfilled and executed, the present law in all its parts.

Given in our palace the 11th April, 1849, I, the QUEEN. The Minister of Commerce, Instruction, and Public Works, JUAN BRAVO MURILLO.

COPPER MINING AND SMELTING IN NORWAY.—According to the report of Mr. Sinding, Bergmaster, in Norway, delivered to the Norwegian Government, and published by them last month, it appears that, in the year 1847, the total number of miners employed in the Norwegian copper works were 694; the quantity of ore produced 9999 tons; total expenditure of the mines, \$55,324. During the same period, the quantity of ore smelted at the different smelting establishments (eight in number) was 10,536 tons; the quantity of copper produced 546 tons; in the production 17,228 lasts of charcoal, 795 fathoms of wood, and 3065 tons of coals were consumed; the total smelting charges were \$56,431. Of this quantity the Alten Mines smelted 2225½ tons, which gave 124 tons 1 cwt. 1 qr. fine copper; 27½ fathoms of wood and 8065 tons of coals were consumed; the smelting charges were \$13,426. The highest smelting charges are those of Roraa, which are \$107 30 skilling per 100 barrels of ore, each containing 750 lbs.; that of Alten is \$98 23 sk. for the same quantity; the lowest are those of Eidet, which are \$66 10 sk. per 100 barrels. All these establishments, with the exception of the Alten, employ blast furnaces, the operations there are conducted on the Swenson method. The average percentage of the ore produced from the different mines is as follows:—Alten, 5.5 per cent.; Quangen, 7.84; Roraa, 8.06; Søbo, 4.05; Meraker, 4.05; Tranfild, Ytterøen, 14.4. Sixty workmen during the same period were employed on the different lodes of chromate of iron; 510 tons of this were obtained at the cost of \$5977. The establishment for the manufactory of chromate of potash had reduced 458½ tons of chromate of iron, and had used in its reduction 12,428 barrels of coals—1380 tons; 163,076 lbs. Russian; 93,267 lbs. Norwegian; and 321 lbs. American potash. The total expenditure of the manufactory was \$35,494 110 sk.; while the produce was 308,890 lbs. chromate of potash, valued at \$41,000—making a profit on the year of \$5505. The total production of the whole of the district was valued at \$282,200. In the same year, sets (*nuthings*) were taken for 15 copper mines, 4 chrome, and 1 lead. But few of the copper mines were paying any dividends, the generality merely supporting themselves. With the exception of the works at Omdal, in Telemak, the property of Messrs. Reid, Irving, and Co., and Setersdal, near Christiansand, which are now abandoned, all the copper mines of Norway lay in the northern district, so that we have here given the total production of copper as well as that of chromate of iron. The report of the silver mines at Kongberg and the different iron mines had not been delivered into the Government.

CHESTER AND HOLYHEAD RAILWAY.—The only remaining link in the completion of this line will not now very long be wanting. Mr. Stephenson, the engineer, in conjunction with Captain Claxton, R.N., and Mr. Edwin Clarke, has, after a series of preliminary experiments, decided on the plan for launching, at an early day, the tubes that are destined to span the Menai Straits and form the Britannia Bridge, through which the trains will make their transit, and thereby supersede the necessity of taking passengers over that portion of the line, at a considerable delay, by ordinary vehicles. The pontoons for the launch are already on the spot.

ON PYROGEN, No. V.

BY JOHN JOSEPH LAKE, ROYAL LABORATORY, GOSFORD.

In this paper I propose to call the reader's attention to what appears to be one of the peculiar and important offices of pyrogen. Water, we are aware, is a medium by which many chemical substances amalgamate, or are decomposed, and new forms of matter produced. Every device may be adopted to effect a chemical change between some substances in vain; but let only a little water be introduced, and the desired effect is instantly brought about, and new forms of matter, possessing totally different properties, arise. Pyrogen acts in a similar way; and, by its abstraction or introduction, chemical action takes place. Thus nitric acid is produced by electric discharges in atmospheric air; also, when mercury is placed in contact with a solution of ammonia, and brought under the influence of a strong current of pyrogen, the mercury expands in volume, and becomes a soft substance. When communication with the battery is broken, the natural state of the pyrogen and other matters is restored, the affinity between the mercury and ammonia destroyed, and the amalgam resolves itself into its original elements. Potassium, sodium, and other metals of the same class, are instances of the operation of this cause, the affinity between the metals and the oxygen being destroyed by electricity. This was first effected by powerful galvanic batteries, the other and more recent way being the employment of intense heat. By the latter method, a similar operation takes place as with a battery, the heat disturbing the natural electric state of the metallic oxide, and it may, therefore, be termed the thermo-electric method.

Pyrogen appears also to be an essential ingredient, or agent, in the composition of carbonic acid, which is readily generated by passing a current through carbon points in presence of oxygen; also by the thermo-electric method of burning; for what I have already observed, concerning a candle being the electric light, applies to any substance in a state of ignition, or combustion. Flame, as already shown, is produced in the union of oxygen and hydrogen, which form, as it were, the electrodes of Nature's galvanic battery, pyrogen being developed as in the artificial battery, when the electrodes are brought sufficiently near together and in a proper state. The red colour and light of a charcoal, or coke, fire arises from a similar cause, the difference being that carbon takes the place of hydrogen. The products of combustion, carbonic acid and oxide, prove the correctness of my views to a very considerable extent.

The well-known experiments on the ignition of metals in acid solutions, by Prof. Grove, Mr. Pollock, and others—some of which I have already illustrated—appear to show the correctness of the above. When small wire electrodes of platinum are employed, and dipped in water, acidulated with sulphuric acid, the acid is decomposed—the sulphur combining with the metal of the negative wire; thus pyrogen acts in this case in a manner similar to a quantity of water poured into a mixture of tartaric acid and carbonate of soda. The decomposition of the acid cannot be the result of the affinity between the platinum and sulphur, as Prof. Grove has very justly concluded; for, on performing the experiments with nitric and muriatic acids, the results are similar—the acids being decomposed, although there exists a very weak affinity between platinum and hydrogen, and the other gases disengaged. In the instance of nitric acid, we find that it is both formed and decomposed by the agency of pyrogen.

Many will, no doubt, differ with me as to the correctness of my views of this subject; and their great importance will naturally create difficulty in the way of their correctness being admitted. Nevertheless, I feel assured that the principles, if not all the details, will stand the test of time and investigation; for they are founded upon experiment and long observation. The materiality of the electric fluid being once admitted into the mind, its offices may, perhaps, meet with less opposition.

IMPROVEMENTS IN STEAM ENGINES AND FURNACES.

[Specification of patent granted to Mr. James Burrows, of Haigh, near Wigan, engineer and draughtsman, and George Holcroft, of Manchester, consulting engineer, for certain improvements in and applicable to steam-engines, in the machinery and apparatus belonging thereto, in the construction and arrangement of boilers for the generation of steam, and in the furnaces and flues connected therewith, parts of which improvements are also applicable to other classes of engines.]

The first of these improvements consists in arranging the cylinders of compound engines (that is where a high-pressure cylinder and a condensing cylinder are used in conjunction), so that the length of the ports leading from the one cylinder into the other shall be the shortest possible. To effect this object the patentees cause the piston-rod of the smaller or high-pressure cylinder to pass downward through the floor of the engine-house, where it is connected to a beam, the power communicated to which is again transmitted to the beam above the cylinders (which is directly acted upon by the piston-rod of the low-pressure or condensing cylinder) by a connecting-rod. The claim under this head is to reduce the length of the passages in compound engines to a minimum, by causing the piston-rod of the two cylinders to travel in opposite directions.

The next improvement is an arrangement of gearing and cams, to effect a variable opening of the expansion valve, so as to admit a greater or less amount of steam as may be required. A rod from the governor is connected by levers and gearing with the cams for opening the expansion valve, so as to make those cams to slide along the shaft by which they are made to rotate; and as the cams are somewhat of a conical, and not of a step form, as usual, according as they are pushed the one way or the other, so they will retain the expansion valves a longer or shorter time open. These arrangements form the subject of the second claim.

The improvements in furnaces relate to the means employed to project the coals upon the fire. A hopper is placed in front of the fire-place from which the coals are regularly fed in by means of two toothed rollers turning very slowly. Beneath the feed rollers, and within a case, there is placed a disc or plate of metal, the edges of which are slightly curved upwards; this plate is fitted upon the end of an upright shaft, by which it is made to rotate in a horizontal plane and at some considerable velocity. As the coals drop upon the revolving disc, they are immediately projected from its surface on to the fire-bars by the centrifugal force communicated to them by the disc. The disc is made to revolve by means of bands and pulleys, the rotation being continued a short time in one direction, and then by means of self-acting apparatus an equal length of time in the reverse direction, which causes an equal distribution of the coal over the surface of the fire-bars. The arrangements described for projecting the coals evenly upon the surface of the fire-bars form the third claim.

A fourth improvement relates to rotary engines, and consists in making them with three pistons or vanes, which are connected to separate shafts, the one shaft being concentric to or inclosed within the other, and the three shafts being connected outside by three cranks to another shaft which is eccentric to the engine-shaft. These peculiarities constitute a fourth claim.

The last improvement and claim specified consists in having the cylinder of a steam-engine fitted with three pistons, of which the top and bottom ones are connected together, and only moved through a portion of the stroke, their office being to act as valves and points of resistance to back pressure of steam employed to give motion to central piston.

MODE OF SILVERING GLASS BY THE EMPLOYMENT OF GUN-COTTON.—Mr. Vohl has recently discovered that a solution of gun-cotton, in a caustic ley, possesses, in a high degree, the property of precipitating silver from its solutions in the metallic form. In fact, on bringing gun-cotton into contact with a caustic ley, of sufficient strength, the cotton will become dissolved in the ley, giving out ammonia with a considerable degree of heat, and producing a deep brown liquor, somewhat thick: on pouring an acid into this, a brisk effervescence is produced, carbonic acid and nitrous acid being disengaged. The action of the gun-cotton, in this instance, shows that it is not simply dissolved, but undergoes decomposition, by which the atoms of oxygen in the nitric acid enter into combination with the atoms of carbon in the cotton, thus producing carbonic acid, which, as well as the nitrous acid produced by the nitric acid, combines with one part of potash. A fresh decomposition of nitrous salt by the potash, in presence of hydrogenated substances, furnishes ammonia. The most remarkable property of this alkaline solution is the following.—On pouring into it a few drops of a solution of nitrate of silver, and adding ammonia until the oxide of silver formed is re-dissolved (the mixture being slowly heated in a water bath), the liquor will, at a certain period, assume a deep brown colour, and effervesce, the whole of the silver being precipitated on the sides of the vessel. The mirror thus produced is much superior in brilliancy to those produced by means of ethereal oils or ammoniacal aldehyde; and the facility with which it is produced will doubtless render it of practical importance. This property is not exclusively possessed by gun-cotton; it is found also in cane sugar, agar of milk, manna, gums, and other substances which may be rendered explosive by treating them with nitric acid. Picro-azotic acid produces, under the same circumstances, a reflective metallic surface; and it appears that this reaction takes place with all bodies which, when treated with nitric acid, do not furnish products of oxidation, but another series of bodies which admit of carbonic acid forming one of their constituent parts, since they at the same time give up an equivalent of water.—*Technologist.*

The Stevenson Coal Company, who have been lately sinking a new coal-pit to the south-west of the town, and immediately adjoining thereto, found, on Saturday week, the seam they were sinking for—viz.: the main coal, being upwards of 4 ft. thick, about 58 fms. down, of excellent quality, and of the same description as they so long successfully wrought in several of their other pits. They are about sinking for the turf dyke coal in another part of their mineral fields.—*Glasgow Citizen.*

NEW LOCOMOTIVE FOR BURNING HARD COAL.—The locomotive ordered by the Fitchburg Company some time ago, adapted to hard coal as fuel, has been completed by Hinchey and Drury. It is named the *Andover*, and is found to work well so far. It is a freight engine, and went up the road with a heavy train on Saturday morning.—*Bunker Hill Aurora.*

SURREYBURY AND BIRMINGHAM.—The first section of this line from Shrewsbury to Oakengates is complete, and nearly ready for opening. The Government inspector is to go over it in a day or two.

Original Correspondence.

RAILWAYS AND MINES.—No. 1.

SIR.—Your able correspondent, "Placer," seems to consider railways as antagonistic to mines, and that the depression of the one will promote the prosperity of the other. Because railway shares are now at a discount, and startling revelations in relation to their management have recently been made, he recommends capitalists to withdraw their investments from them, and purchase mining shares; or, if a "safe medium of investing large masses of spare capital" be required, he "does not hesitate to express a decided opinion" adverse to railways and in favour of mines. The subject is an important as well as an interesting one; and although you have expressed your concurrence with these opinions in your editorial remarks, yet the encouragement you have ever given to a free discussion of the subjects of your "Original Correspondence," is a sufficient guarantee that a diversity of views does not constitute any reason for their exclusion from your columns.

There are few interests which have been more benefited by the establishment of railways, or whose full development is more dependent on their extension, than that of mines; it was among the collieries that railways originated, and they were nurtured and improved by the strong necessity which impelled the cheap production of coal. The first public railway (the Stockton and Darlington) was instituted to convey minerals to the shipping ports; nor was passenger traffic a primary object with the projectors of the Liverpool and Manchester, the Canterbury and Whitstable, and other railways, of about the year 1830. The conveyance of coal, iron, lead, and other mineral produce, as well as the carriage of general merchandise, were then the principal sources of anticipated revenue. It was not until after the opening of the Liverpool and Manchester, that passengers became an unexpected principal source of railway traffic. This brief retrospect shows the intimate connection there is between railways and mines, and that the prosperity of the one must tend rather to promote than militate against the interests of the other. Railways, it is true, have of late years been extensively patronised by the capitalist, and immense sums have been invested in them, with, perhaps, too much precipitancy, and on somewhat too speculative grounds. But the most "untoward event" in their history is the unfortunate mania of 1845 and 1846, from the depressing effects of which they have not yet recovered. Misfortunes of this kind are not, however, peculiar to, or confined to, railways only—other adventures and speculations have suffered from similar visitations. Somewhere about 25 years ago there was a MINING mania, as rabid and almost as disastrous as the recent disease in railways; joint-stock banks, and the iron, tallow, tea, cotton, leather, wool, corn, and other trades have all passed through trials of the same kind. In all these instances speculation ran riot for awhile, irrespective of all reasonable control—some few rapidly made, and many more as quickly lost, large fortunes; then the bubble burst, and there came stagnation and depression, as in the instance now before us.

It is evident, therefore, that this commercial malady is neither exclusive in its attacks nor permanent in its consequences, for the interests which have been periled by it are many and dissimilar, and have long ago recovered from its effects; and there is no reason why railways should not also revert to their original state on the gradual subsidence of the exciting causes of its depression; but it may probably be said, and with truth, that the recent disclosures as to the management of some lines, will materially retard the re-establishment of public confidence in railways as an investment of capital. Deploable as these revelations of gross malversation undoubtedly are, yet it is but reasonable to anticipate that some important and lasting benefits will result from them. An opportunity has thereby been given to effect a complete revolution in the system of management hitherto pursued, and the shareholders will have themselves to blame if they permit the administration to relapse into its past state. However indefensible the conduct of Mr. Hudson may have been, the servile submission of his colleagues is equally reprehensible. They were chosen by the shareholders to protect their interests and guard their property, and were individually responsible for the due discharge of the important duties entrusted to them. The manner in which they have acquitted themselves of these obligations, voluntarily undertaken, is too notorious to require description. Were the deputy-chairmen, and the other members of the boards, not gentlemen of known probity and honour in private life, there would be little difficulty in characterising their conduct; but, under these circumstances, we are obliged to conclude, that their vigilance has been set to sleep, their judgments warped, and the reproofs of conscience silenced, by the irresistible fascination that hovered around the Railway King; for,

"In his living
Walked crowns and crowns; realms and islands
Were as plates dropt from his pocket."

Having thus bent the knee to the iron crown, and basked in the smiles of the monarch, it surely is not too much to expect them to follow him into his exile, and to resign a trust which they held only to minister to his power and greatness. By such a course they would best serve the interests of the proprietors, and make the only amends in their power to the constituents whose confidence they have disappointed. Should they still cling to office, in the delusive hope that Mr. Hudson's retirement will be accepted by the public as a scape-goat for their transgressions, there will not be wanting, it is to be hoped, some Oliver Cromwell to turn them out of doors, and put the key in his pocket, keeping it safe until it is required to open the door for the admission of better men. It may probably be said that such a sudden dismissal of experienced directors, and the substitution of untried men in their place, would be attended with evil results. Some inconvenience might possibly ensue; but, with an office establishment and working staff accustomed to the several duties required to be performed, the new directors would be speedily qualified to act well and efficiently; and less detriment would arise from such a course of procedure than by retaining in office any members of the Hudsonian boards. Should such a course be pursued, there are better times yet in store for railways, and much lasting good may ultimately result from the evils which have befallen them.

Without, therefore, depreciating the value of mines as a good means of investing capital, too much stress ought not to be laid on any depression in railways which arises from temporary or remedial causes; nor is it fair to take the difference in the prices of shares at different dates, and state the amount of such difference as a loss actually sustained. AN ENGINEER.

May 8.

[To be Continued.]

GOOD CONDENSING WATER FOR STEAM-ENGINES.

SIR.—I am not a little surprised at the statements made by Mr. Sims, of Redruth, of the ill effects of condensing water on the steam-engine in Cornwall, when so simple a remedy may be had. What Mr. Sims proposes is a remedy; but I think there is one more simple and less expensive, and without any alteration to the present condensing work, or even without pumping the water from the adit. Now, if you take the hot water from the air-pump and cause it to pass through the cold water in a series of pipes (copper is the best, because they can be made thinner than of any other metal), this same water will return for condensing with a gain *ad infinitum*; all that is required is, a sufficient quantity of pure water to fill every part with at first, and a small supply to make good the loss. The present condensing water will do, if purer cannot be had conveniently. If the water lifted from the adit to surface be not required for dressing, &c., this "cooling" process may be carried on at the adit level, and thereby save the lifting of that quantity of water to the surface; or, perhaps, a less quantity may do. The hot water will have to run down to the adit, pass through the series of pipes immersed in the cold water, and return to condense with again at the surface. If there is a sufficient supply of water to condense with on the surface, all that is required is a sufficient quantity of small copper or other pipes, about 1½ in. diameter, and wood launders to place the pipes into, to allow the cold water to circulate outside at the same time the hot water is circulating inside: the process is complete. I will supply drawings and estimates of the expense to any party who will give me a description of the situation, size of engine, &c., &c., and an analysis of the water where such a plan is proposed to be adopted.

Parys Mine, May 7.

C. B. DYER.

IMPORTANCE OF GOOD WATER FOR STEAM-BOILERS.

SIR.—I have just read, in your last week's Journal, a communication headed as above, and am glad to see that important subject claiming some attention amongst practical men. Mr. Sims has well described some of the serious defects of the present system of supplying water as it is pumped from the mine, charged with various earthy matters, in some cases almost to saturation, and even where the water is tolerably clear, it contains in some districts pernicious compounds held in chemical solution, and which become too manifest in the boilers, condensers, air-pumps, and feed-

pumps through which it passes. Mr. Sims proposes, as a remedy, the adoption of Hall's condensers, so as to secure a supply of pure water to the boilers; this object can, I believe, be obtained by a much more efficient and less costly means—viz.: Howard's patent condenser. In the latter simple and satisfactory process, the water admitted through the injection cock for condensation, is extracted by the air-pump, and delivered into the hot well in the usual way; but from the hot well it is passed through a series of small tubes, these tubes being placed within a cistern, through which a good supply of cold water is flowing, and the same injection water, with the products of condensation, after having passed through this refrigerator, is conducted back to a cistern, and again used as injection water, and so on *ad infinitum*. Now, it is evident that if this water be pure to begin with, and the boilers are also filled right height with pure water, no deposit can result; and as the apparatus is provided with a vapouriser for the supply of any loss occurring through leakages, &c., the engine may work for years with clean boilers and water-courses. In Hall's plan there is a pressure, varying with the degree of vacuum obtained, upon all the tubes composing the condenser, and also the packing joints and screws which secure the tubes into their places; many hundreds of these joints, with all their liability to leakage, and which leakage would directly interfere with their utility, being necessary in a large engine; while in Howard's mode these liabilities to derangement can scarcely be said to exist, and its easy adaptation to engines already at work, is too obvious to require further explanation.—J. STENSON: Northampton, May 7.

IMPROVEMENTS IN TUBES FOR LOCOMOTIVES AND MARINE ENGINE-BOILERS.

SIR.—I was rather surprised at the contents of a paragraph in your last paper, relative to a patent obtained by Messrs. Richardson and Co., of Darlaston, Staffordshire, under the above head. The mode of operation therein alluded to has been in common practice for several years past, and from the general account given there would appear to be nothing new in what Messrs. Richardson and Co. claim as the subject of their patent. I know works where the rolling of copper and brass on a mandril, through a pair of grooved rollers, in the manner stated in your paragraph, has been regularly carried on for a lengthened period, and where, therefore, the novelty of the present invention consists I am at a loss to discover. A patent for the manufacture of rolled copper and brass tubes without joints is now in existence, and is one by which the most perfect tubes can be produced. "The native ingenuity of our country" has thus, you will perceive, not been slumbering, or waiting for the present discovery. OBSERVER.

May 10.

COPPER SHEATHING.

SIR.—Mr. Prideaux does not comply with my request in communicating the information required, because precipitation by iron is a foreign process to us. Under the circumstances, I could not think of giving him the promised information. Mr. Prideaux should not be over delicate in communicating any information he may have derived from his friends, or otherwise, as he must perceive that I have almost let the cat out of the bag in order to arrive at the truth of this mystery. Perhaps Mr. Prideaux is not aware that our object is, and has been, to get all the metal we can out of the ores, and as soon as possible, so as to swell the surplus, without any regard whatever as to the durability of the copper. I have no doubt that, when Mr. Prideaux clearly sees our position, he will conclude that it is not an easy thing to turn us out of our ordinary way of doing. I shall be always anxious to keep this discussion alive.—A ROASTER-MAN, May 9.

RECENT EXTINCTION OF THE COLLIERY CONFLAGRATION.

SIR.—I was extremely delighted with Mr. Goldsworthy Gurney's ingenious and truly scientific application of a jet of high-pressure steam to the ventilation of coal mines; but I have been electrified at the triumphant success which has attended his recent process of the extinction of a fire in the recesses of the coal mine. I admire it for its novelty; I applaud it for its scientific ingenuity. It shows the value of science, and attests the triumph of mind. When I was examined, along with my former colleague and friend, before the Commons' committee, I confess I was startled by the bold idea of his proposition of illuminating the mine by light reflected from mirrors; but I frankly avow this transcends even that gigantic scheme. To overwhelm combustion, under such circumstances, by an inundation of invisible gases, is certainly at once startling and astonishing!—J. MURRAY: Portland-place, Hull, May 8.

DECOMPOSITION OF LIGHT BY REFLECTION.

SIR.—Last year I published an experiment anonymously, showing that the retina of the eye possesses the faculty of decomposing light (*Athenaeum*, No. 1080; *Year Book of Facts*, 1849, p. 140). It would appear from the following experiment, which, as far as I am aware, is now, that it also undergoes decomposition by reflection. On closing one eye, and holding up any solid body, so as to screen the light passing in at a window from the open eye, except a very narrow strip between the window frame and the edge of the screen, the whole of the colours of the solar spectrum will be rendered visible—the violet appearing on the window-frame, the red at the screen, and the other colours in their proper order between. On placing a second screen nearer the eye than the first, and admitting a strip of light between their edges, the same effect will be observed; but in this instance the violet appears at the first screen instead of the red, and the red at the second screen nearest the eye. A uniform law will be observed in this—viz.: that the red end of the spectrum always occurs at the nearest screen. When the two screens are placed at equal distances from the eye, red appears at the edge of each, and a deep blue line equidistant between them. When the edges of the screens are of polished metal, there is no difference in the result. The following appears to be the proper explanation of the cause of these appearances:—The screen nearest the eye effects the decomposition of the light; the red rays are developed on its edge, the blue rays on the edge of the furthest screen, and the violet on the body of the screen itself. The use of the remote screen appears to be to keep back the glare of the direct white light, and so render the decomposition of the rays in contact with the nearest screen visible, which, without this, could not be observed. In the sketch, R represents the rays seen between the screens, S S and T, the rays, R, undergoing decomposition, which is accomplished by reflection, and not by refraction, as with the prism. It is remarkable that the degree of reflexivity of the coloured rays is in the same order as that of their refrangibility. Red suffers the least, if it be not in reality developed by the other rays deserting it; it appears on the edge of the nearest screen. Violet suffers the greatest amount of reflection, appearing on the body of the furthest screen, as indicated by the dotted line in the sketch; the light of a candle, or lamp, or of the moon, undergoes decomposition in the same way. On looking at the moon through a small pin-hole in a card, it appears reduced in size, and if the edge of the hole in the card be brought so as to conceal about half the surface of the moon, the prismatic colours will be rendered visible, red appearing at the edge of the hole, the other end of the spectrum at the edge of the moon, and the intermediate colours in their proper order between. If the light of a candle, lamp, or the moon, be reflected from a polished white metal rod, or roll of tin, it may be decomposed by bringing the edge of a screen to it. In this instance the rod answers for the screen furthest from the eye, and the reflection for the light admitted from the window.—JOHN J. LAKE: Royal Laboratory, Gosport, May 9.

STEAM NAVIGATION.—MARINE LOCOMOTIVE.
RESPECTED FRIEND,—I believe it is generally admitted among scientific men, that steam navigation has not answered the expectations which had been entertained respecting it—I mean in an economical point of view—the expense attending that mode of locomotion being very great, considering the limited speed hitherto attained. I have long thought that this might be attributed to the form of the vessel, which may be termed an elegantly-shaped raft, with a water-wheel whirling on each side; and may it not be asked whether there is not room for improvement on that principle. The sphere rolling on the plane has been long considered the true form of locomotion on land, but has never been adopted on the water, the raft, or sledge-formed vessel, being retained; but could not the former plan be adopted at sea with great advantage? I mean by suspending the vessel above the water on large hollow metal globes, or, rather, on their axles; the propelling power being applied to the globes, causing them to turn on

their axis. I presume that much less power would be required to make them revolve, than to put a vessel in motion by causing the paddles to beat the water on each side. Of course, strength and lightness should be combined in such a structure, in order to allow the globes to sustain the weight of the engines, &c., without being immersed more than one-sixth of their diameter. I introduced the subject last night to the members of the Liverpool Polytechnic Society, when an engineer present expressed his opinion that the propelling power required on either plan would be the same; but I believe I am not in error in imagining that there will be more than one opinion on the subject. Steam navigation is still evidently in its infancy. The power of steam has not yet annihilated space by sea as by land, and we may conclude that there is still room for improvement. I imagine that the adoption of the floating wheel might cause some change in the system; we would then have, instead of a steam-vessel, a marine locomotive, which would roll over the water instead of cutting through it. At the meeting alluded to, another member asked whether the revolution of the wheels would propel the vessel without paddles? on which the president remarked, that this was the question which was asked when the railway locomotive was first constructed, as it was thought that cogs would be required; but, of course, this is a mere matter of detail, as small fans might be placed round the globes, which would give them sufficient hold of the water. I think some plan based on this principle might be adopted with advantage, particularly in rivers with a strong current; and if the principle here proposed is sound, it is, I presume, susceptible of numerous modifications, or it may prove a stepping-stone to some plan which might cause some revolution in the mode of steam navigation.

Liverpool, 5th mo. 8.

JOHN DE LA HAYE.

ELECTRO-MAGNETISM AS A MOTIVE-POWER.

SIR.—In the report of a committee, appointed by the Legislature of the United States to inquire into the practicability of electro-magnetism as a motive-power, and which is inserted in your last Number, it is stated that the power was exhibited (among other ways) in the suspension of a mass of iron of 50 lbs. without visible support. As this statement has been made as a proof of the attractive power of magnets at a distance, I beg to observe that the attraction of one of the stationary magnets in my large electro-magnetic engine, having 11 inches in a square, and only coiled with ten layers of ribbon wires, has been found to be—

1344 lbs. at a distance of.....	of an inch.
1008 lbs. " " " " " "	" "
370 lbs. " " " " " "	" "
224 lbs. " " " " " "	" "

The magnets being excited with 40 Mayoorth cells, 6 inches square.
Windsor-terrace, Piccadilly, May 10. S. HJORTH.

WONDERS IN LOCOMOTION.—NEW MOTIVE-POWER.

SIR.—A correspondent of yours, who, masked by an assumed name of "Azotus," published in your valuable Journal of the 5th inst. a heap of abuse, mixed up with subterfuges, on the subject of the pyroxyline power, is unworthy of being noticed; for every intelligent reader of your Journal will have seen that I am not answerable for the ignorance in which the whole world—and my tutor as a member of that world—was buried previous to the brilliant discoveries of Sir Humphry Davy on the subject of combustion. It was neither mine, nor my tutor's fault, that the *Theoria Chemie Dogmatica* of Stahl, supported by Becker, and not properly cleared up by either Cavendish, Scheele, Priestly, or Lavoisier, should have been so much in vogue at the time when my tutor had imbibed his first notions about the supporters and non-supporters of combustion. But as "Azotus" has now the advantage of seeing the true principles discussed, almost in every penny publication of the day, he might have had the charity of allowing me too as likely a chance of knowing something about the nature of carbon as himself. If my tutor erred on many points of science (as I have myself shown in the letter "Azotus" alluded to), still his theory on the explosive forces is good. But, what is better than all—my tutor was a GENTLEMAN.

Now, turning to another anonymous correspondent, in the *Mining Journal* of the same date, signing himself "E. M. L.," I will reply to him only by citing here a known fact—that the glorious uncertainty of chemistry may be compared only to the glorious uncertainty of the law. And the best proof of this assertion will be afforded by transcribing here a few of the analyses of the very pyroxyline which has caused this discussion:—

1. Messrs. Schmidt and Hecker ("E. M. L.'s" authority):—

	By weight.	By volume.
Carbonic acid	19.73	17.03
Carbonic oxide	35.13	47.45
Binoxide of nitrogen	16.14	20.41
Nitrogen	5.03	6.75
Carburetted hydrogen	6.23	8.36
Water	17.74	100.00

2. Messrs. Porrett and Teschemacher:—The formula in question is as follows—C₁₂H₈O₈ + 4 N O₅ = nitrated lignin; or a centesimal proportions:—

Carbon	20.00
Oxygen	62.22
Hydrogen	2.22
Nitrogen	15.56 = 100.00

Or it may be thus described:—Lignine dried at 350°—Carbon .. 20
Water .. 20 = 40
Nitric acid (15.56 nitrogen, 44.44 oxygen) .. 60 = 100

3. Mr. Wm. Crum:—Pure gun-cotton consists of—

24.24 = 12 C.	24.24 = 12 C.
21.21 = 7 H O.	3.36 = 7 H.
54.55 = 3 N O.	14.14 = 3 N.
100.00	59.26 = 22 O.

4. M. Pelouze's formula:—C₁₂H₈O₈ + 2 N O₅ + H O; or, without hypothesis, C₁₂H₁₁O₁₂N₂; this composition corresponds to the numbers:

Carbon	26.66
Hydrogen	3.70
Oxygen	59.28
Nitrogen	10.36

5. Mr. Ransome's formula:—C₁₂H₈O₈ + N₂ From these results it would appear that gun-cotton is formed from ordinary cotton by the abstraction of 2 atoms of hydrogen and the addition of 3 atoms of nitric acid—thus, on its explosion, it would be converted into 12 atoms of carbonic oxide, 8 atoms of water, and 2 atoms of nitrogen.

6. M. Peligot says:—Cotton, on its conversion into gun-cotton, loses 1 equiv. water, and combines with 3 equivs. nitric acid, and on its decomposition yields 9 C O₂, 3 C O, 3 N₂, and 9 H O.

7. Messrs. Dumas, Porrett, and Teschemacher asserted that there were compounds of cyanogen in the gases of pyroxyline.

8. Messrs. Fordos and Gellis state, that the odour which is disengaged during the experiment does not resemble that of prussic acid; and afterwards they forget their first opinion, and conclude by copying other authorities, and say that there is a considerable quantity of cyanic compound in the gases.

Now, all I have to say to those chemical gentlemen is this:—Form a jury of 12, agree among yourselves, and then, and not till then, may the public accept your verdict. But, in conclusion, I must add that my invention has nothing whatever to do with chemical analysis, but with mechanical power of the gases; and I must, therefore, for the future decline answering any such arguments, which are evidently irrelevant as to the subject of motive-power which is to be derived from pyroxyline.

I am quite humble about mine own abilities, but for whatever is deficient in my pyroxyline power is more than able to compensate. My machinery have proved their skill, and that is all I wish to attain—none of your vain glory! My machinery is not corroded by the gases—hence none of your chemical presumptions and suppositions! My machinery works at a cheap rate, and is portable and controllable—none of your cry, therefore, of "Mad dog! mad dog!" ADOLPH COUNT DE WERDINSKY.

Brighton, May 7.

THE GUN-COTTON ENGINE.

SIR.—I might despair at the sight of the long columns brought into the field against me, were I not a true son of the hardy little nation on the shores of the Baltic, just now engaged in warfare against a superiority of numbers; but this being the case, I do not hesitate to take up the gauntlet, and merely supported by a few plain figures and a little plain reasoning, risk a battle against my numerous opponents. In order to consume as little as possible of your valuable space, I will endeavour to be brief, and will, therefore, take the liberty of using in my defence the results furnished by my adversaries. I beg to remark, that my calculation in the preceding

* In Howard's arrangement the boiler is supplied by a pump from the hot well in the usual way, the remainder only being cooled down again for re-injection.

* See *Philosophical Magazine*, Third Series, Vol. xxx, No. 198, January, 1847, pp. 1, 258, 273, 299, 409, 426.

Number of the *Mining Journal* was only intended to be a rough estimate; and I trust that you, as well as the greater number of your readers, will judge less harshly than Mr. John Curr, of the error I committed in misplacing the specific gravities of the two gases, especially as it by no means affected the result of my calculation.

According to Count de Werdinsky, the total volume of gas generated by the combustion of 1 cubic inch of gunpowder is equal to from 1000 to 2000 cubic inches, when expanded to the pressure of the atmosphere. As the experiments on gunpowder differ so very considerably, I think that I may assume 1500 cubic inches as a fair average. The count further asserts, that gun-cotton is $3\frac{1}{2}$ times as strong as gunpowder, which, of course, means that 1 cubic inch of gun-cotton will produce $3\frac{1}{2}$ times 1500, or 5250 cubic inches of gas of the before-mentioned density. As cotton is a vegetable matter, I think that I may assume the specific gravity of compact gun-cotton matter to be equal to the mean density of woods—viz.: between 1333 and 1530—say 1430. If so, 1 lb. of gun-cotton would contain 30 cubic inches, and the volume of gas generated by the explosion of this quantity would be equal to 90 cubic feet, if the gas and the surrounding bodies were kept at the temperature at which the gases are generated, or something like 2500° Fahr. You will perceive, that even then the products of the explosion are but equal to half the volume of steam obtained by burning the same weight of coal, and that, consequently, they possess but half the power; but, I think, it is altogether out of the question to keep a receiver, destined to resist an enormous pressure, or any other of the acting parts of the engine, at a temperature near the melting point of cast-iron; and I, therefore, beg to reduce the 90 cubic feet of gas from the temperature of 2500° to that of 400°, as being, in my opinion, the utmost heat to which, at least the moving parts of, any machinery may with safety be exposed. All gases, as the experiments of Gay, Lussac, and Dalton, have proved, expand uniformly about $\frac{1}{273}$ ths of their volume for every degree Fahr., and heating the mixed gases from 400° to 2500° has, consequently, expanded their volume $\frac{2100}{400}$, or $5\frac{1}{4}$ times; reducing them again to 400°, we get $90 \times \frac{400}{2100}$, or nearly 20 cubic feet, which, I think, agrees tolerably well with the rough estimate in my first letter.

I will leave the Count Werdinsky's son, or any other "lad," to correct his calculation for driving a carriage. I only beg to remark, that the count quite forgets to consider the length of stroke of his piston (which, by-the-by, from the data given, seems to be 1 foot), and, consequently, the volume of gas consumed for each revolution. This calculation appears, in fact, to be rather confused, and I trust will not make many "believers" among engineers. A simple statement, in plain figures—how many cubic feet of gas, at a practicable temperature, can be obtained from a given weight of gun-cotton—would probably be the best means of convincing practical men; and I shall certainly be most ready to confess my error, if the count succeeds in proving any mistake on my side.

Mr. John Curr is always so particular in impressing upon his readers the fact of his superior ingenuity, that I hardly dare advance anything against such an authority. I beg, however, to draw his attention once more to the "imposing and elaborate series of experiments" conducted by MM. Dulong and Arago; he will then, probably, on the head of the table, observe the following note:—*The steam is supposed to be in contact with the fluid from which it is generated, and water and steam to be alike in temperature. Gas, or steam, not in contact with the fluid from which it is generated, expands uniformly $\frac{1}{273}$ th of its volume for every degree Fahr., as above mentioned.*

I think this will overthrow Mr. John Curr's calculation. I certainly do not pretend to possess much experience in chemistry; however, I venture to say that Mr. Radley's theory of the processes going on during the explosion of gun-cotton is decidedly wrong. If hydrogen, carbon, oxygen, and nitrogen, are fixed together at a high temperature, the hydrogen and oxygen, no doubt, will combine to form water; if any oxygen is left, it will convert the carbon into carbonic acid (or carbonic oxide), and, most likely, the nitrogen will form no combination at all. The result of Mr. Radley's calculation appears to differ considerably from mine, but, in fact, it agrees very near with my estimate. According to Mr. Radley, 208 lbs. of gun-cotton produce 3040 cubic feet of gas, or 1 lb. (say) 15 cubic feet, of 60° Fahr., which, at 400°, Fahr., would expand to about 23 cubic feet. London, April 28. C. J. HANSEN, C.E.

THE GUN-COTTON ENGINE.

SIR,—The data furnished by "E. M. L." of Ougrée, in to-day's *Mining Journal*, enables me to estimate the power to be derived from the combustion of gun-cotton, assuming that the temperature of the atmosphere at the time of Schmidt and Hecker's experiment was about 60° Fahr., or exactly 16° C., and also that its pressure was 15 lbs. on a square inch, as follows:—A gramme being .0022 lbs. avoirdupois, and a cubic centimetre .061 cubic inch, and 1728 cubic inches 1 cubic foot—

$$.061 \times 588 \times .0022 = \text{about } 9\frac{1}{2} \text{ cubic feet of gas produced from 1 lb. of gun-cotton when at } 16^\circ \text{ C.}$$

Taking the temperature of the gas when in action on the piston at 406° Fahr. (which differs little from the temperature assigned by Mr. Hansen), or 208° C.—

$$16 \times 144 \text{ in.} \times 15 \text{ lbs.} \times 9\frac{1}{2} \text{ ft.} = 17,587 \text{ horses, the power of the gas acting on the piston per minute, on condition that 1 lb. of gun-cotton be expended per minute, and estimating the elastic pressure of the gas in agreement with the experiments of the Academy of Sciences of Paris on steam. Taking gun-cotton at 8d. per lb. and coal at 6d. per bushel, allowing a tenth of a bushel per hour for each horse's effective power, and assuming that one-half the power of the gun-cotton is expended on friction, &c., the comparative cost will be as follows:—}$$

$$8 \times 60 \times 10 \times 2 = 40\text{d. in 10 hours—the expense of gun-cotton.}$$

$$17,587 \times 6 = 439\text{d. in 10 hours—the expense of coal.}$$

Of the effects of xyloidine on iron, or other metal, I have no experience. Upper Penton-street, May 5. JOHN CURR.

WONDERS OF LOCOMOTION—NEW MOTIVE POWER.

SIR,—From reading the correspondence which has appeared in the two last Numbers of the *Mining Journal*, I am induced to offer a few remarks upon Count de Werdinsky's "Wonders of Locomotion." For this purpose I shall make use of the materials furnished in the letters of Mr. Hansen, Mr. Radley, and the count, as from such materials we may arrive at a sufficiently accurate conclusion for practical purposes. Mr. Hansen sets out by stating that 1 lb. of coal will convert as much water into steam as, at an atmospheric pressure, would be in volume 212 cubic feet; so far he is undoubtedly right. Mr. Radley's analysis of gun-cotton gives 28 cubic feet as the volume due to the elementary gases in their uncombined state, at 60° Fahr., and at an atmospheric pressure; and when in their resultant state, after explosion and recombination, his analysis gives 15 cubic feet of gas at the same temperature and pressure as above, as that due to 1 lb. of gun-cotton. The count has spent most of his argument upon the mere dilation of the gases by the heat evolved in the explosion of the cotton; and he lays much stress upon an hypothesis of his, that the elementary substances exist for an appreciable time in an isolated or uncombined state. I am apt to think that some of our best chemists are of a different opinion upon this point, and deem it more probable that the transition of the elementary substances from the one compound state to the other is instantaneous, and stand in the relation of cause and effect to each other.

But be this as it may, I will give the count the benefit of the doubt (if any there be) upon this point; and take the elementary gases resulting from 1 lb. of gun-cotton as 28 cubic feet at 60° Fahr. Adding to this their increased volume at 212°, which is the temperature of steam at an atmospheric pressure, I found the volume of these elementary gases would be 38 cubic feet, which is the relation they bear when considered at the same temperature and pressure as the steam generated by the 1 lb. of coal—so that 1 lb. of coal gives 212 cubic feet of steam and 1 lb. of gun-cotton gives 38 cubic feet of elementary gases, each of an atmospheric pressure and 212°. If we take the resultant gases, which we have seen are only 15 cubic feet, at 60° Fahr., we find, at a temperature of 212° Fahr., that they would be increased in volume to 20 cubic feet—so that in this case we have the 1 lb. of coal, as before, producing 212 cubic feet of steam; and the 1 lb. of gun-cotton producing resultant gases, after explosion and recombination, equal to only 20 cubic feet, at the same temperature and pressure as the steam.

I come now to the count's argument, based upon the great dilation of the gases by the heat evolved; and here I cannot help thinking, that had

he bestowed a little more thought upon the matter, he would have discovered that steam possesses all the adaptations which any other gas does for being dilated by heat; and that was it desirable so to dilate it by such high temperatures, it can be done with little or no greater consumption of coal; but the count will find, if he reduces his scheme to practice, that such high temperatures are objectionable. The practical view of the matter is, as it appears to me, when viewed in relation to *E. S. d.*, that upon the supposition that the gases can be employed under such circumstances in their elementary state, the cost of equal amounts of power would be, that from gun-cotton we should have to pay 100s. for that which, by the aid of coal and steam, we can obtain at less than 1s.; and if the gases should be too quick in their recombination (as I anticipate they will) for the count to catch them in their uncombined state, then the user of gun-cotton will have to pay nearly 200s. for that which coal and steam would supply at 1s. It is a pity Mr. Curr had not taken a little more pains to inform himself upon the relation of temperatures and pressures before he had written his letter upon this subject. Birmingham, May 2. THOMAS CRADDOCK.

THE XYLOIDINE ENGINE.

SIR,—I venture to say, that had Count de Werdinsky been aware that two other letters—that of "Azotus" and "E. M. L."—were so closely to follow his own last communication, he would, from prudent motives, have withheld its insertion. The letters in question were of themselves such an able refutation of the count's fallacious statements, as well as a confirmation of my own, that I should have thought it unnecessary to have trespassed again in your columns upon the same subject; but, Sir, I feel bound to do so, inasmuch as the count appears wanting in truth and candour, notwithstanding he professes to be an admirer of fair play and fair argument. The count says, "as there is no pleasure without its alloy of pain, it is now my unpleasant duty to correct here the misrepresentations of Mr. J. Horsley, in reference to the cause of oxidation of fire-arms." I certainly thank the count for offering to become my tutor; but wherein am I wrong? What corrections are needed? What misrepresentation have I made? Surely every sensible man can easily perceive that the count, instead of being able to teach others, requires himself first to be taught.

Now for his candour. I never assigned any reason for the oxidation of fire-arms, save and except when gun-cotton was used; I nowhere mentioned the effect of gunpowder, steam, or any other power, as the count represents. Really, Sir, the count has not met my question fairly. I simply asked him, since nitric acid is used to impart explosive properties to the cotton, what becomes of the nitrogen?—which he cannot explain, and a good reason why, because his knowledge of the matter is of a kind with his strange idea of hydrogen gas being given off from the carbon contained in gunpowder, as also that gunpowder yields a vast deal more nitrogen than gun-cotton, which is an unprovable assertion; for gunpowder has never been known to corrode a barrel, though, from frequent firing, it may be fouled or soiled, with a somewhat deliquescent, but neutral, salt; fouling and corroding are, however, very different terms.

Again, to use the count's own words—"Poor gun-cotton, how it is turned and twisted!" Ay, indeed I may add, ignited and analysed too; and, notwithstanding that analysis stands starting the count in his face, yet, somehow or other, wilful parabolic ignorance is preferred, and used in direct opposition to stern truth and positive fact. Then, verily I with the poet, "If ignorance is bliss, 'tis folly to be wise."

The count concludes his letter by adding, that if Mr. Horsley has found in the gases from ignited gun-cotton not only nitrogen (which he, the count, never acknowledged to have existed), but such quantities of absolute nitrous acid gas, &c. (here is an exaggeration), the fault lies with his own mode of making the cotton. Now this, again, is another gratuitous and unfounded assertion, and shows plainly—as "Azotus" justly remarks—how utterly inconsistent it is, for him to be introducing such a peculiarly complicated machine, dependent for its working on a power he knows not the nature of. So far, however, from the cotton prepared by me being so bad as the count makes out, I could refer him to Dr. Ure, Dr. Pereira, Dr. Murray, and many other competent authorities, who have each tried it, and pronounced it to be of a superior kind to that ordinarily made; and I might here mention, too, that my gun-cotton was the first to find its way to the Governor-General of India, where, at the time, it excited the most intense interest. In conclusion, I have only to say, that it matters not what gun-cotton be used; and, as an asserter, without fear of contradiction, that the best mode of necessity, from the very nature of its constitution, produce the results I have already mentioned; and, if the count still doubts it, let him perform one other experiment—viz.: fire it *in vacuo*, by means of galvanism or electricity—when, on taking his apparatus to pieces, if he has ever seen nitrous acid gas, he will recognise it instantly by the orange-red fumes, which will be abundantly given off.—JOHN HORSLEY: Ryde, Isle of Wight, May 8.

THE NEW MOTIVE-POWER (?)

SIR,—As the Count de Werdinsky is pleased to say that the evolution of nitrous acid gas in the discharge of gun-cotton is chargeable as a fault on Mr. Horsley's "mode of preparing that explosive substance," may I be permitted to ask whether, as intimated by Mr. Horsley, the count availed himself of the gun-cotton prepared in Dr. Ure's laboratory by Mr. Horsley? Your able correspondent of Liege has satisfactorily accounted for the formation of nitrous acid gas, as a product of the explosion of gun-cotton: A more intractable and dangerous substance cannot well be conceived of; and I have only to add, in corroboration of Mr. Horsley's conclusion, that, by firing gun-cotton in the hand, and in contact with the skin, the skin has been stained yellowish, from the nitrous acid evolved; and that not only from the gun-cotton prepared by Mr. Horsley, but that of Schönbein and others.—J. MURRAY: Portland-place, Hull, May 7.

ANTHRACITE.

SIR,—When I incidentally, on a former occasion, referred to carbonic acid gas and carbonic oxide as the exclusive products of the combustion of stone-coal, I of course referred to anthracite as such—not to any extraneous matters with which it may be accidentally contaminated, such as sulphuretted iron, &c., being quite aware that it is not unfrequently met with so impregnated; and the fatal effects then referred to seemed to me more likely caused by these two gases, though it may be aggravated by the presence of sulphurous acid gas.—J. MURRAY: Hull, May 7.

DEANE'S DIVING APPARATUS.

SIR,—You some time ago referred to the application of a modification of Deane's diving apparatus for the purpose of encountering conflagration. The principle of Deane's apparatus, so successfully employed in reference to the submarine wreck of the *Royal George*, beyond all doubt, originated with me, and was brought before the public long before Deane adopted it. The recommendation was promulgated in consequence of a case of drowning in Yorkshire, where, from the delay in recovering the body, the means of restoration proved ineffective. The proposal was simply this:—An air-tight hood was supplied with goggles for vision; a flexible pipe from above allowed the expired and heated air to ascend and escape; and it might be floated by cork, &c., or otherwise rendered buoyant on the surface of the water; while a condenser, as a terminus to another pipe, supplied the hood with pure air.—J. MURRAY: Hull, May 7.

ACTION OF THE SUN'S RAYS ON A STEEL BALANCE.

SIR,—The phenomenon recorded by your ingenious and observant correspondent, "H. E.," is most interesting one, and eventually may lead to results more important than may now be contemplated. I am thereby reminded forcibly of the old experiment made with a view of proving the materiality of light. A delicate vane was sensitively poised on a point, and enclosed in a glass case, in order to preserve it intact from the undulations of atmospheric air. The concentrated rays of light were, by means of a lens, directed to the vane, when it began to move, and, if I mistake not, the rate was uniform. I do not mean, however, to say that the experiment proved the materialism of light, or that there is a parallelism in the case before us.

I can have no doubt that the curious phenomenon now referred to has to do with the electro-magnetism of the solar light, and is more nearly allied to Dr. Faraday's discovery of the circulation of a magnet round a sun-beam, and *vice versa*, than may be at first sight imagined. The temporary, it may be, magnetism imparted by the solar rays to the steel balance, and producing an oscillation, distinctly proves a tendency to effect an orbital revolution. The experiments of Signor Marichini and Mrs. Somerville corroborate this view of the case. I remember to have observed the effects of the *actinism* of the sun's rays curiously developed on the summit of the Leaning Tower of Pisa. That portion of the iron rail at the summit longest exposed to the action of the sunbeam was much oxidized, while the other portion was comparatively but little affected. Hull, May 7. J. MURRAY.

ACTION OF THE SUN'S RAYS ON A STEEL BALANCE.

SIR,—With your permission, I beg to offer a few remarks on the letter of your correspondent, "H. E.," relative to the motion of his assay balance in "glass case," when the sun shines on the window in which it is placed. I may observe, that my observations are made with a view to elicit further information on the subject. The sun is a source of caloric, from which the steel beam radiates, by absorption, that imponderable substance within the glass case. The ordinary expansion of the steel beam from the heat of the sun, I think quite sufficient to produce the action referred to. Again, the air within the glass case will be somewhat disturbed by the emission of caloric, and will, I think, help to keep up the motion. Other causes than those I have alluded to—situation, &c.—may assist in producing the motion. One thing is quite clear, that a window into which the sun shines is an unfit situation to use the balance in; the heat of a

room in which an accurate assay balance is to be used should not exceed 62° Fahr. There are evils attending the use of steel beams for assay purposes, as their accuracy is very questionable after a little use; they acquire a degree of polarity, quite sufficient to affect their correctness, and, therefore, should not be used where great accuracy is required. Oxidation is another evil to which they are subject. Ordinary gun-metal has been found to answer well for beams used in assaying where great nicety is required, when provided with proper bearings. I need remark that, of whatever metal the beam is constructed, it requires the greatest care, both in the use and keeping, to ensure correctness.—W. B. London, May 7.

P.S.—The assay balance, when not in use, should not be allowed to rest, or vibrate, on its bearings, and it should be kept from the light as much as possible.

ACTION OF THE SUN'S RAYS ON A STEEL BALANCE.

SIR,—Observing in your columns of last week a letter from a correspondent, asking for an explanation of the cause to which is to be attributed the playing of the beams of his assay scales, I would submit as a solution to his inquiry the following; at the same time, I do not pledge myself that such is the real cause, but may, I think, account for it, and, at least lead to further inquiry and investigation. It is questions of this nature which appear to me well calculated to render your *Journal* valuable to scientific men; and as we well know the greatest results are arrived at from the most simple observations, so the elucidation of a subject of interest, in a scientific point of view, may possibly lead to a chain of inquiries and results tending to the advancement and promulgation of science. It would appear to me, according to the letter of your correspondent, that the balance is placed in a position true south—that is to say, with the line of the beam east and west. Now, the action of the sun is, in my opinion, simply the heat concentrated by its rays, which rarefying the air in the enclosed case in which the scales are placed, the air so confined makes a circuit, and thus keeps the scales in continuous action; while on the withdrawal of the sun's rays, and consequent heat, the beam naturally is restored to its former repose, or state of rest. I merely submit this as one of the many communications you may receive on the subject. E. H. Observatory, May 9.

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COUNTY—HIGH-STREET, ST. AUSTELL.

PROSPECTUS.
This mine is situated in the parishes of St. Ewe, and St. Mewan, near St. Austell, in Cornwall, which is generally admitted to be one of the finest tin districts in the county; it is bounded on the west by the Great Hewan Mines, and on the east by the Great Polgoth; the sett is very extensive, being about three-quarters of a mile on the course of the lodes; the south lode of Polgoth runs through part of the sett on the north, and the Hewan lode traverses its entire length; there are also several other lodes, only three of which have been worked on to any extent. The Great Hewan lode was worked on about 60 years ago, contemporary with Polgoth, the only machinery used at this period appears to have been a small water-wheel, with which they sunk as low as 14 fms. under adit; the lode was found very productive at that depth, but the water, however, from the lode being very considerable, their pumping power was found inadequate to drain the mine; they also laboured under other disadvantages, for to stamp the tin it was necessary to convey it a long distance from the mine, where stamping power could be obtained, the expense of which, with other difficulties, eventually caused a suspension of operations, which were never resumed; had steam stamps been known at this time, there is but little doubt that the workings would have been extended much further, as the mine at the present time is working without machinery, the owner having a stamping mill near the mine. There are two lodes to the south of the above that have been worked on, but at what period cannot be ascertained. In recently clearing up the old adit, several large rocks of grey copper ore were found, which produced 40 per cent. for fine copper. There is every indication of a great deposit very near this spot, as a green oxide of copper is issuing very strongly from the side of the level; there have also been found in the burrows, above the shallow adit, very rich stones of grey copper ore. Adjoining this lode an old shaft has been cleared up, and was sunk 5 fathoms deeper, when it proved to be on a tin lode, 34 feet wide, and very good work. There are evident surface indications of many other lodes, from the rich shales of tin that have from time to time been found, some stones of which have been sold for £2 10s. each. The strata is composed of a light killas, very easy for driving, and stands without timber, its development will be effected at a very reasonable outlay, as the capital named will show.

This mine has been well known to the local mining community for the last half century, and presents greater surface workings than most mining setts; a proof that the minerals lie shallow, and have been found valuable when raised; its proximity to the Great Polgoth Mine renders it more valuable than it would otherwise appear to be, in consequence of that mine now making returns of upwards of £5000 per month; the grant of this mine is for a term of 21 years, at 1-18th dues, and the lease will be transferred to the company on the proprietors receiving the sum of £200, for which sum will be included the machinery now on the mine, consisting of two horse-whims, whim ropes, kibbles, several shaft tackles and ropes, winze kibbles, ladders, a quantity of miners' tools, a 14-foot water-wheel, with six heads of stamps, also a 12-foot water-wheel, with four heads of stamps, boulders, racks, a trucking machine, 10 trunks, keeves, 60 fathoms of launders, barrows, timber, delving serges, copper bottom sieves, burning house, dressing floors, and dressing tools complete, with numerous other useful matters.

The law expenses connected with the three deeds, surveys, plans, commissions, and other expenses in the formation of the company will be taken by four instalments; first, £250; second, £200; third, £200; and the fourth, £150—all the instalments to be paid within the first year, the proprietors claiming the privilege of taking the said amount in shares, if they should prefer doing so. The plan of proposed operations consists in cutting down the present engine-shaft, which is 32 fathoms deep, and sinking it to the 50—sinking one of the present winze shafts, and another new one to the same depth, clearing up the old workings at the 23 fathoms level, and driving 100 fathoms at the 50; tin ground will comprise the erection of a 40-inch cylinder double acting engine, 40 heads of steam stamps, three whims, smith's shop, store room, carpenters' shop, stables, counting-house, the necessary dressing floors, burning house, and the usual appendages of a mine of this magnitude. To complete the whole of the above works, and put the mine in a profitable state of working, the engineer has allowed six months, but to facilitate the same he recommends the company to sink the shafts, by means of a locomotive mining engine, which will effect a saving of 25 per cent. in capital, and cent. per cent. in time, the 50 fm. level by such means would then be down in three months, and the large engine and stamps be ready for work by the time the levels are laid open; but tribute pitches may be set in less than two months from the time of commencing, as the water will be farked below the 23 fathom level at once, thus lying the old workings open and ready for mining operation. The following estimate, which has been carefully computed from practical data, may be considered somewhat lower in amount than the usual scale of mine cost; but, as an assurance to the company that it will not exceed such amount, contractors are prepared to treat with the company, for doing it at a considerably less sum; but the whole is consequent on the capital being duly subscribed for, when required.

ESTIMATE.
Surface erections, consisting of two steam-engines, 40-head stamping-mill, dressing floors, three horizontal reversing whims, cottage, store-room, workshop, stable, &c. £2025 0 0
Underground work, sinking the engine, and two other shafts, and driving 100 fathoms of levels, with clearing 250 fathoms of old levels 875 10 0
Pitwork complete 506 6 0
Mine stores and necessary stock 370 4 0
Office and salaries six months 175 0 0
Purchase, &c. 800 0 0
Cash balance at bank 250 0 0
Total £5000 0 0

Applications may be made for shares to Mr. Mitchell, Truro; Mr. Collier, Hewan; Mr. Carpenter, Callington; Mr. Luxon, Bodmin; Mr. Warner, St. Austell; Mr. Luscombe, Exchange, Plymouth; Mr. Vacher, Exeter; Mr. Oliver, Coggeshall, Essex; and at the London Office, where specimens and the plans may be seen, and every information obtained.

Reports have been received from Capt. Williams, of Great Polgoth Mine; Capt. P. Finch; Capt. Davies, St. Agnes; and Capt. Gripe, late of the Charlestown United Mines, which will be found among our Mining Correspondence.

Detailed prospectuses can be obtained at the office of the Mining Journal, 26, Fleet-street, London.

DR. LOCOCK'S FEMALE WAFERS have no taste of medicine, and are the only remedy recommended to Females.—Price 1s. 1d., 2s. 9d., and 11s. per box.—Beware of Imitations: Unprincipled persons counterfeit this medicine in the form of "pills." Purchasers must, therefore, observe that none are genuine but "wafers," and that the words "Dr. Locock's Wafers" are stamped on the outside each box. Beware: Several of the counterfeit medicines have words on the stamp so nearly resembling these, as to mislead the unwary. Purchasers must, therefore, strictly observe the above caution.—Agents: De Silva and Co., 1, Bride-lane, Fleet-street, London; sold by all medicine vendors, of whom also may be had DR. LOCOCK'S "PULMONIC WAFERS," for asthma, consumption, coughs, and colds.

ADELAIDE MINING ASSOCIATION, SOUTH AUSTRALIA.

"It needs no prophetic spirit to forecast that, in a very few years, the mining interest of South Australia will be a formidable rival to all other competitors, whether European or foreign. There is no such promising or legitimate field for the employment of British capital as South Australia holds forth: every circumstance which can conduce to the successful development of mining speculations is essentially in favour of this colony; and none of the causes which made most of the South American and other foreign mining concerns, since 1825, unprofitable to a proverb, can be anticipated to cloud the sun of prosperity which has just risen over our favoured province."—*Dutton's South Australia and its Mines*, page 257.

A company, under the above title, is in course of formation, the object of which is the working of some of the numerous copper and other metallic mineral deposits of South Australia. These deposits have been found, in many instances, close to the surface, and almost in every direction throughout the colony, in lodes of extraordinary magnitude and richness; the ores consisting mostly of carbonates and oxides, remarkable for their purity and high produce, and for their very great fusibility. The finer description of ores may be selected for shipment to England, while those of an inferior quality may be smelted on the spot, and the produce find a ready sale for the Indian market.

The mineral capabilities and resources of South Australia have become a great fact; and considering how recent has been the discovery there of copper ore, it may safely be affirmed, that the following returns exhibit a progress of mining development which has not a parallel.

1840.	1841.	1842.	1843.	1844.
£409,000	£17,170	£3,158	£4,168	£171,883

and it is expected that the returns of 1845 will be much larger. The average price of South Australian copper ore at Swansea is £24 per ton.

The bulk of these returns is the result of the successful working of the Burra Burra Mine—the only undertaking which can be said to have been yet brought into full operation; a few months quarrying in this mine sufficed to repay its fortunate proprietors the whole of their outlay, and the shares of the company, on which £5 only have been paid, yield quarterly dividends of £10 each; and sales were made last Sept. at the enormous price of £250 to £275 per share. The net amount of dividends in three years has been £123,000, the capital being only £13,300. The mine shows no indication of any falling off in respect of either the quality or quantity of its produce.

The Tungklilo (Australian Mining Company's), Kapunda, Port Lincoln, and other mines, are yielding ores equal in quality to those of the Burra Burra, and some of them bid fair to rival her in importance.

It is well known that numerous promising lodes have been discovered in various parts of the colony, on which little or no trial has been made, simply because they were not found at once to be Burra Burra, or Kapunda; others have been kept secret, or left unwrought, partly owing to the difficulty of obtaining miners on reasonable terms, and partly owing to the injurious influence of the late Royalty Tax, or the want of available capital wherewith to work them to advantage. The removal of these obstacles, combined with the decided improvement in the metal market, renders the present a most favourable opportunity for the object here proposed; and the proprietors, who have long been in communication with residents in the colony, on the subject of mineral lands, are enabled, from their confidence in those parties, and from the secrecy preserved, to offer to secure possession, for the sole benefit of this company, of certain mineral lands, affording indications of great promise, which have been specially reserved by the discoverers for this object, avoiding all unnecessary outlay of the capital of the company in an useless extent of territory, as well as in high premiums to which purchases at second hand are exposed.

The correspondence on this subject may be seen at the offices of the company.

The proprietors propose to leave the final approval of such reserved discoveries, together with the selection of any other reserved lands, to a responsible and well qualified parties, who shall be appointed by the company; with this view, the proprietors have secured the services of a gentleman of the highest respectability and connections, as superintendent of the affairs of the company, from his long standing and extensive relations with the mines in Cornwall—from his being personally well known to a large portion of the emigrant mining population of South Australia, believed to be eminently qualified for this important office, and who will himself take a considerable number of shares in the undertaking, thereby affording a guarantee for the judicious application of the funds thereto shortly to be advanced.

It is proposed to make the selection of the land, and the purchase of the same, subject to specific instructions from the board of directors, as to his duties. The peculiar advantages offered by this company consist in the selection of mineral lands, under the most careful provisions with reference to their value, and to the eventual success of the undertaking, and in the acquiring the same by the most economic means, as nearly as possible at the minimum price of £1 per acre, as fixed by the Government.

The affairs of the company will be conducted in London by a board of five directors, who shall hold 100 shares each, and in South Australia by a committee of management, consisting of the superintendent, and two other competent and respectable residents, whose qualification shall be the holding also of 100 shares; of this committee, the superintendent will be permanent chairman, and no resolution which shall not include his vote in the majority shall be valid. The directors will retain the power to cancel at any time the appointment of any member of the local committee.

The duties of the local committee will comprise the selection of mineral land, and the management of the finances, correspondence, and general business of the company.

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DAMP AND GASEOUS EXHALATIONS. SANITARY MEASURES.

ALL MEMBERS OF BOARDS OF HEALTH are especially DIRECTED to the most EFFECTIVE MEANS which they can ADOPT to PREVENT the injurious and often FATAL EFFECTS upon the HEALTH of the COMMUNITY, arising from exhalations that are produced from moisture, decayed animal matter (as in grave-yards), stagnant water, and collections of fætid refuse, tending to produce a miasmatic state of atmosphere. In situations so effected, the impervious quality of the ASPHALTE of SEYSEL renders it the most perfect PAVEMENT or COVERING that can be relied upon for hermetically closing, and thereby preventing the rising of moisture and escape of noxious vapours. The present extensive application of this material for covering roofs, terraces, and arches, for preventing the percolation of wet, is strong evidence of its effectiveness for the above purposes, which is further confirmed by the following extract from the Report of the Commissioners on the Fine Arts:—

"In 1839, I superintended the construction of a house of three stories on the Las d'Enghien. The foundation of the building is constantly in water, about 19½ inches below the level of the ground floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground floor with a layer of SEYSEL ASPHALTE, less than half an inch thick, over which coarse sand was spread.

Since the above date, no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil, of a grey stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 2½ in. above the external surface of the soil, and only 19½ in., at the utmost, above that of the sheet of water.

The layer of ASPHALTE having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts."

* This method has been adopted at the new Houses of Parliament.
Seyssel Asphalt Company, Stangate, London. I. FARRELL, Secretary.

PATENT RAILWAY AND OTHER CARRIAGE AXLES, MANUFACTURED BY THE PATENT SHAFT AND AXLE-TREE COMPANY, BRUNSWICK IRON-WORKS, WEDNESBURY, STAFFORDSHIRE.

The Judicial Committee of the Privy Council having declared that the AXLES MADE BY THE PATENT SHAFT AND AXLE-TREE COMPANY had proved a PUBLIC BENEFIT in greatly conducting to the SAFETY of RAILWAY TRAVELLING, the exclusive right to manufacture has been extended for four years, on condition that the practice of charging a moderate price, proved hitherto to have been pursued, should be made imperative.

It was also proved that these Axles were in general use—upwards of 100,000 having been supplied to the English and Continental Railways, among whom are the London and North-Western, the Midland, and the Great Western; that they had withstood frequently severe tests applied by the engineers of these railways for the purpose of experiment, and others still more severe to which they were accidentally subjected in use. In one such instance a Patent Axle, 4½ inches in diameter, sustained the whole force of a heavy train going at the rate of 60 miles an hour, by which it was twisted and bent nearly double, without showing the least fracture.

The patent principle of manufacture causes the axles to be equally strong in all directions, for the "fagot" is made in a cylindrical form, by the external bars being rolled of such a section as to fit accurately around a centre bar. This fagot, however large, is perfectly welded throughout its whole length at one heat, avoiding the necessity of the frequent heating and hammering of the ordinary mode, by which much risk is run of imperfect welding, burning, and otherwise injuring the iron.

The use of this principle, combined with experience gained of the quality and admixture of the iron and mode of treatment best adapted to resist the strain to which an axle is subjected, enables the Patent Shaft Company uniformly to supply safe axles.

In all cases where the use of the Patent Shaft Company's Axles are specified for, it is respectfully recommended that information be sent to the works; for, although every Patent Axle is stamped with the company's name, worthless axles, made at an expense little beyond that of common bar-iron, have, in many instances, been substituted.

It was given in evidence before the Privy Council, by Robert Stephenson, Esq., M.P., that having, in consequence of an accident, tested a number of such common axles, he found 48 out of 49 broken so easily, and as to be perfectly unfit for use; that he ordered them all to be removed, and that he has since recommended the Patent Axles to be used exclusively.

The trial of the Patent Shaft Company's Iron is solicited in cases where the power to resist a great strain is of importance. Evidence can be afforded from several railway engineers, of great economy having resulted from its use, in preventing the breakage to which their coupling chains were frequently previously subjected, particularly on the Midland Railway, where the heavy mineral traffic subjects these chains to unusual strains.

Iron manufactured on the patent principle is also recommended for coach and carriage axles, for, if not afterwards injured by the coachman, all risk of breakage will be avoided.

WRIGHTON'S PATENT ELASTIC SCREW COUPLING.

THE PROPRIETORS of this simple and useful INVENTION invite the attention of Railway Companies to the ADVANTAGES and ECONOMY to be derived from its general adoption. The severe tests to which it has been subjected on the Eastern Union Railway fully demonstrate that its application to trucks or goods waggon, with dead draw hook and solid buffers, produces as perfect and beneficial a result as a complete set of spring traction and buffing gears so costly, and at about one-fourth the cost, the cheapest that can be supplied. Its application to passenger carriages will be found equally beneficial in giving additional ease and elasticity to a train, and preventing the injurious shocks at starting and stopping so much complained of. For further particulars apply to Mr. Parsons, Albert-place, Lewisham; or at the Patent Office, 106, Fleet-street.

EXPLOSION AT WHITECHAPEL.

HENRY BAKER begs to call the attention of Engineers and Proprietors of Steam-Engines, to his newly-improved STEAM GAUGE, which shows the pressure and temperature of the Steam, as seen in the drawing annexed. It is an ornament to the engine-room, and supercedes the ordinary Mercatorial Gauge in these respects, by not being so cumbersome, much cheaper, and warranted accurate.

It has been tested at the Polytechnic Institution, London, with satisfactory results; and since the boiler explosion of the Cricket steam-boat this Gauge has been adopted on board the steam-boats plying on the River Thames.

Boiler explosions, in many instances, occur through Steam Gauges not being in good working order; therefore, every attention should be paid to these very necessary adjuncts.

HENRY BAKER'S STEAM GAUGES may be fixed in a counting-house, and will show the pressure the same as if fixed in an engine room—thereby having a check on the person working the engine.

Price.....£2 2s.
in brass frames, showing the barometric scale from 22 in. to 30 in. Price.....£3 3s.

VACUUM GAUGES, in mahogany, very elegant, showing the barometric scale in full. Price.....£3 3s.

HENRY BAKER, BAROMETER, THERMOMETER, AND PHILOSOPHICAL INSTRUMENT MANUFACTURER, No. 90, HATTON-GARDEN, LONDON.

Just published, price 2s., or by post for 2s. 6d.,

THE SCIENCE OF LIFE: or How to Live and What to Live For; with ample Rules for Diet, Regimen, and Self-Management—together with Instructions for securing perfect Health, Longevity, and that sterling state of happiness only attainable through the judicious observance of a well-regulated course of life.

By A. PHYSICIAN.
London: Kent and Richards, Paternoster-row, and all booksellers.

THE SCIENCE OF WASHING.—A New Mode of Washing," says the *Maidstone Gazette* of January 30, 1849, "which has been advertised by Mr. Twelvetees, bookseller, has been submitted to us for trial. We have ascertained by careful experiment that the plan pursued is really a great saving. Several persons who have purchased the pamphlet have been so well satisfied with it, that they have called at our office to suggest that we might do great good, and save much unnecessary labour, by strongly recommending its adoption by our readers generally, in our scientific column. We do this most conscientiously."—The above method is so economical and expeditious, that a FAMILY'S SIX WEEKS' WASH CAN BE ACCOMPLISHED BEFORE BREAKFAST, for less than 6d., without a washwoman.

Directions to be had only of Harper Twelvetees, bookseller, 14, New Millman-street, Finsbury, London, for 31 stamps and a directed envelope, and of all booksellers.

FOR EVERY HOUSE IN THE KINGDOM.

HARPER TWELVETEES' GENUINE CONCENTRATED WASHING PREPARATION, for accomplishing a week's wash in 1½ hour, and is warranted not to injure the finest fabric.—Sold by all chemists and oilmen, in bottles, at 6d., 1s., and 1s. 6d. The 1s. 6d. bottles contain sufficient for 48 gallons of water, which will boil three lots of clothes, being equal to 144 gallons.

All the leading journals in the kingdom have spoken favourably of this invaluable process, now adopted in most of the infirmaries, asylums, public institutions, and families throughout the kingdom.

MANUFACTURED only by TWELVETEES, BROTHERS, Ink and Blacking Manufacturers, Millman-street, Bedford-row, London, wholesale and for exportation. Two thousand more agents wanted.

Sold wholesale by Barclay and Sons, Sutton, Edwards, Hansey, &c.

No Chemical or Potash preparations are introduced, which are notoriously injurious to linen.—MANUFACTORY—MILLMAN-STREET, BEDFORD-ROW, LONDON.

London: Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their offices, No. 26, FLEET-STREET, where all communications are requested to be addressed.

(May 13, 1849.)